GENERAL INFORMATION

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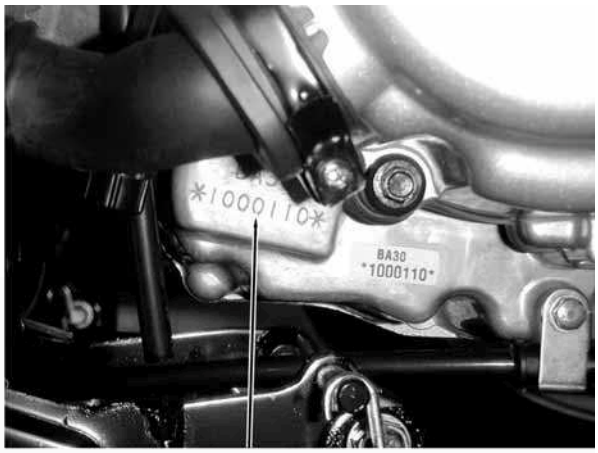
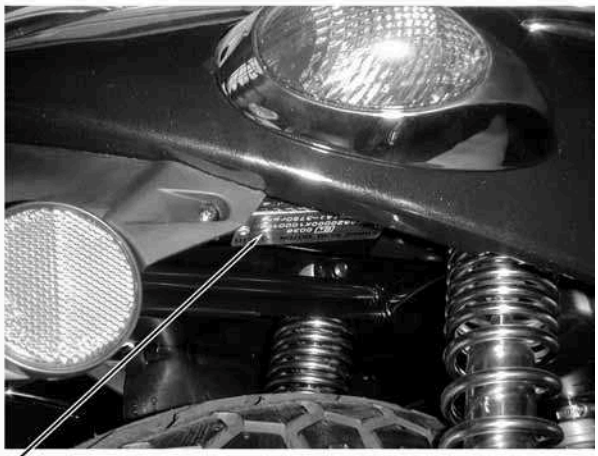
ENGINE FRAME VEHICLE IDENTIFICATION SERIAL NUMBER

Location of Frame Serial Number



Location of Engine Serial Number



Vehicle Identification Serial Number

SPECIFICATIONS

Name & Model No.			PEOPLE 125
Overall length (mm)			1950
Overall width (mm)			690
Overall height (mm)			1075
Wheel base (mm)			1335
Engine type			O.H.C.
Displacement (cc)			125
Fuel Used			92# nonleaded gasoline
Net weight (kg)	Front wheel		41
	Rear wheel		70
	Total		111
Gross weight(kg)	Front wheel		65
	Rear wheel		116
	Total		181
Tires	Front wheel		80/80-16 45P
	Rear wheel		100/80-16 56P
Ground clearance (mm)			160
Perform-ance	Braking distance (m)		4.4 (30km/h)
	Min. turning radius (m)		2
Engine	Starting system		Starting motor & kick starter
	Type		OHC air cooled 4-cycle
	Cylinder arrangement		Single cylinder
	Combustion chamber type		Semi-sphere
	Valve arrangement		O.H.C., chain drive
	Bore x stroke (mm)		52.4 x 57.8
	Compression ratio		9.6:1
	Compression pressure (kg/cm²)		13
	Max. output (ps/rpm)		9.6/7500
	Max. torque (kg m/rpm)		1.0/6500
	Valve timing	Intake (mm) Open	7.3
		Intake (mm) Close	0
		Exhaust (mm) Open	6.9
		Exhaust (mm) Close	0
	Valve clearance (cold) (mm)	Intake	0.10
		Exhaust	0.10
	Idle speed (rpm)		1700rpm
	Lubrication System	Lubrication type	Forced pressure & wet sump
		Oil pump type	Inner/outer rotor type
		Oil filter type	Full-flow filtration
		Oil capacity	0.91 liter
		Exchanging capacity	0.81 liter
	Cooling Type		Forced air cooling

Fuel System	Air cleaner type & No		Paper element
	Fuel capacity		6.8 liters
	Carburetor	Type	VE
		Piston dia. (mm)	24
		Venturi dia.(mm)	22.1 equivalent
		Throttle type	Butterfly type
Electrical Equipment	Ignition System	Type	CDI
		Ignition timing	15°~28°BTDC/1700rp
		Contact breaker	Non-contact point type
		Spark plug	NGK C7HSA
		Spark plug gap	0.6～0.7mm
	Battery	Capacity	12V6AH
Power Drive System	Clutch	Type	Dry multi-disc clutch
	Transmis-sion Gear	Type	Non-stage transmission
		Operation	Automatic centrifugal type
	Reduction Gear	Type	Two-stage reduction
		Reduction ratio 1st	0.86~2.64
		Reduction ratio 2nd	10.98
Moving Device	Front Axle	Caster angle	25°
		Trail length	
	Tire pressure (kg/cm²)	Front	1.75
		Rear	2.00 (2.25)
	Turning angle	Left	45°
		Right	45°
Brake system type		Front	Disk brake
		Rear	Drum brake
Damping Device	Suspension type	Front	Telescope
		Rear	Swing arm
	Shock absorber type	Front	Telescope
		Rear	Swing arm
Frame type			Steel pipe

SPECIFICATIONS

Name & Model No.			PEOPLE 150
Overall length (mm)			1950
Overall width (mm)			690
Overall height (mm)			1075
Wheel base (mm)			1335
Engine type			O.H.C.
Displacement (cc)			150
Fuel Used			92# nonleaded gasoline
Net weight (kg)	Front wheel		41
	Rear wheel		70
	Total		111
Gross weight(kg)	Front wheel		65
	Rear wheel		116
	Total		181
Tires	Front wheel		80/80-16 45P
	Rear wheel		100/80-16 56P
Ground clearance (mm)			160
Perform-ance	Braking distance (m)		4.4 (30km/h)
	Min. turning radius (m)		2
Engine	Starting system		Starting motor & kick starter
	Type		OHC air cooled 4-cycle
	Cylinder arrangement		Single cylinder
	Combustion chamber type		Semi-sphere
	Valve arrangement		O.H.C., chain drive
	Bore x stroke (mm)		57.4 x 57.8
	Compression ratio		9.2:1
	Compression pressure (kg/cm²)		15
	Max. output (ps/rpm)		10.5/7500
	Max. torque (kg m/rpm)		1.1/5500
	Valve timing Intake (mm)	Open	7.3
		Close	0
	Valve timing Exhaust (mm)	Open	6.9
		Close	0
	Valve clearance (cold) (mm)	Intake	0.10
		Exhaust	0.10
	Idle speed (rpm)		1700rpm
	Lubrication System: Lubrication type		Forced pressure & wet sump
	Lubrication System: Oil pump type		Inner/outer rotor type
	Lubrication System: Oil filter type		Full-flow filtration
	Lubrication System: Oil capacity		0.91 liter
	Lubrication System: Exchanging capacity		0.81 liter
	Cooling Type		Forced air cooling

Fuel System	Air cleaner type & No		Paper element
	Fuel capacity		6.8 liters
	Carburetor: Type		VE
	Carburetor: Piston dia. (mm)		24
	Carburetor: Venturi dia.(mm)		22.1 equivalent
	Carburetor: Throttle type		Butterfly type
Electrical Equipment	Ignition System: Type		CDI
	Ignition System: Ignition timing		15°~28°BTDC/1700rp
	Ignition System: Contact breaker		Non-contact point type
	Ignition System: Spark plug		NGK C7HSA
	Ignition System: Spark plug gap		0.6～0.7mm
	Battery Capacity		12V6AH
Power Drive System	Clutch Type		Dry multi-disc clutch
	Transmission Gear Type		Non-stage transmission
	Transmission Gear Operation		Automatic centrifugal Type
	Reduction Gear Type		Two-stage reduction
	Reduction Gear Reduction ratio	1st	0.86~2.64
		2nd	10.98
Moving Device	Front Axle Caster angle		25°
	Front Axle Trail length		
	Tire pressure (kg/cm²)	Front	1.75
		Rear	2.00 (2.25)
	Turning angle	Left	45°
		Right	45°
Brake system type		Front	Disk brake
		Rear	Drum brake
Damping Device	Suspension type	Front	Telescope
		Rear	Swing arm
	Shock absorber type	Front	Telescope
		Rear	Swing arm
Frame type			Steel pipe

SERVICE PRECAUTIONS

- Make sure to install new gaskets, O-rings, circlips, cotter pins, etc. when reassembling.
- When tightening bolts or nuts, begin with larger-diameter to smaller ones at several times, and tighten to the specified torque diagonally.
- Use genuine parts and lubricants.
- When servicing the motorcycle, be sure to use special tools for removal and installation.
- After disassembly, clean removed parts. Lubricate sliding surfaces with engine oil before reassembly.
- Apply or add designated greases and lubricants to the specified lubrication points.
- After reassembly, check all parts for proper tightening and operation.
- When two persons work together, pay attention to the mutual working safety.
- Disconnect the battery negative (-) terminal before operation.
- When using a spanner or other tools, make sure not to damage the motorcycle surface.
- After operation, check all connecting points, fasteners, and lines for proper connection and installation.
- When connecting the battery, the positive (+) terminal must be connected first.
- After connection, apply grease to the battery terminals.
- Terminal caps shall be installed securely.
- If the fuse is burned out, find the cause and repair it. Replace it with a new one according to the specified capacity.
- After operation, terminal caps shall be installed securely.
- When taking out the connector, the lock on the connector shall be released before operation.
- Hold the connector body when connecting or disconnecting it.
- Do not pull the connector wire.
- Check if any connector terminal is bending, protruding or loose.
- The connector shall be inserted completely.
- If the double connector has a lock, lock it at the correct position.
- Check if there is any loose wire.
- Before connecting a terminal, check for damaged terminal cover or loose negative terminal.
- Check the double connector cover for proper coverage and installation.
- Insert the terminal completely.
- Check the terminal cover for proper coverage.
- Do not make the terminal cover opening face up.
- Secure wire harnesses to the frame with their respective wire bands at the designated locations.
  Tighten the bands so that only the insulated surfaces contact the wire harnesses.
- After clamping, check each wire to make sure it is secure.
- Do not squeeze wires against the weld or its clamp.
- After clamping, check each harness to make sure that it is not interfering with any moving or sliding parts.
- When fixing the wire harnesses, do not make it contact the parts which will generate high heat.
- Route wire harnesses to avoid sharp edges or corners. Avoid the projected ends of bolts and screws.
- Route wire harnesses passing through the side of bolts and screws. Avoid the projected ends of bolts and screws.

- Route harnesses so they are neither pulled tight nor have excessive slack.
- Protect wires and harnesses with electrical tape or tube if they contact a sharp edge or corner.
- When rubber protecting cover is used to protect the wire harnesses, it shall be installed securely.
- Do not break the sheath of wire.
- If a wire or harness is with a broken sheath, repair by wrapping it with protective tape or replace it.
- When installing other parts, do not press or squeeze the wires.
- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses routed along with handlebar should not be pulled tight, have excessive slack or interfere with adjacent or surrounding parts in all steering positions.
- When a testing device is used, make sure to understand the operating methods thoroughly and operate according to the operating instructions.
- Be careful not to drop any parts.
- When rust is found on a terminal, remove the rust with sand paper or equivalent before connecting.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

- Symbols:

  The following symbols represent the servicing methods and cautions included in this service manual.

Engine Oil : Apply engine oil to the specified points. (Use designated engine oil for lubrication.)

Grease : Apply grease for lubrication.

Gear Oil : Transmission Gear Oil (90#)

Special : Use special tool.

* : Caution

: Warning

TORQUE VALUES

STANDARD TORQUE VALUES

Item	Torque (kg-m)	Item	Torque (kg-m)
5mm bolt, nut	0.45～0.6	5mm screw	0.35～0.5
6mm bolt, nut	0.8～1.2	6mm screw, SH bolt	0.7～1.1
8mm bolt, nut	1.8～2.5	6mm flange bolt, nut	1.0～1.4
10mm bolt, nut	3.0～4.0	8mm flange bolt, nut	2.0～3.0
12mm bolt, nut	5.0～6.0	10mm flange bolt, nut	3.5～4.5

Torque specifications listed below are for important fasteners.

ENGINE

Item	Q'ty	Thread dia.(mm)	Torque (kg-m)	Remarks
Cylinder head bolt A	2	8	0.9	Double end bolt
Cylinder head bolt B	4	8	0.9	
Oil filter screen cap	1	30	1.5	
Exhaust muffler joint lock nut	2	8	2.2	Double end bolt
Cylinder head nut	4	8	2.0	Apply oil to
Valve adjusting lock nut	2	5	0.9	threads
Cam chain tensioner slipper bolt	1	6	1.0	
Oil bolt	1	8	1.3	
Clutch outer nut	1	12	5.5	
Clutch drive plate nut	1	12	5.5	
Drive face seal cover bolt	3	4	0.3	
Starter clutch cap bolt	3	6	1.2	
Drive face nut	1	12	5.5	
Spark plug	1	10	1.2	
Starter clutch lock nut	1	22	9.5	Left hand threads
Cam chain tensioner screw	1	6	0.4	

FRAME

Item	Q'ty	Thread dia.(mm)	Torque (kg-m)	Remarks
Steering stem lock nut	1	10	12.0	U-nut
Front axle nut	1	12	6.0	U-nut
Rear axle nut	1	14	12.0	U-nut
Rear shock absorber upper mount bolt	1	10	4.0	
Rear shock absorber lower mount bolt	1	8	2.5	
Speedometer cable set screw	1	5	0.45	
Front shock absorber tube bolt	1	5	0.45	
Front shock absorber upper mount bolt	2	8	0.1	
Front shock absorber lower mount bolt	2	8	1.8	
Front shock absorber hex bolt	1	8	3.0	
Rear shock absorber lower joint lock nut	1	8	3.5	Apply locking agent

SPECIAL TOOLS

Tool Name	Tool No.	Remarks	Ref. Page
FLYWHEEL PULLER	E002		14-8
LOCK NUT SOCKET WRENCH	E009		16-7
TAPPET ADJUSTER	E012		3-5
OIL SEAL & BEARING INSTALL	E014		11-4,12-5
FLYWHEEL HOLDER	E017		9-3,14-10
BEARING PULLER	E008		10-4
BEARING PULLER	E018		10-4
BEARING PULLER	E020		10-4
BEARING PULLER	E031		
BUSHING REMOVER	E019		13-0
FLYWHEEL HOLDER	E021		9-3,9-13
LONG SOCKET WRENCH	E022		
CLUTCH SPRING COMPERESSOR	E027		9-8
CRANKSHAFT PROTECTOR	E029		
CRANKSHAF BEARING PULLER	E030		11-0
BUSHING REMOVER	E032		6-0
LONG SOCKET WRENCH	F002		12-5
CUSHION ASSEMBLEN & DISASSEMBLE TOOL	F004		13-0
RACE CONE INSTALL	F005		12-16
TOOL BOOX	E033		

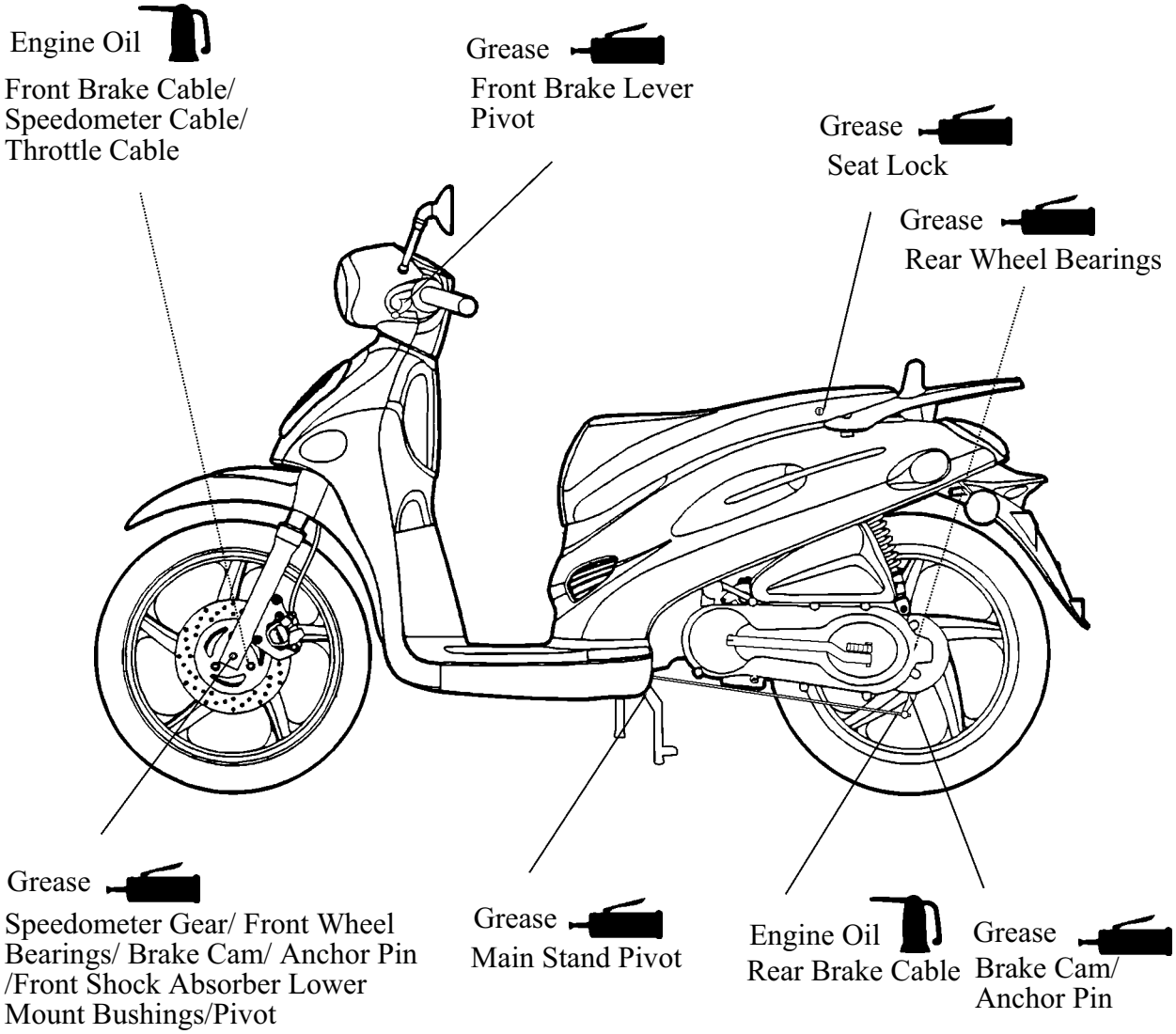
LUBRICATION POINTS

ENGINE

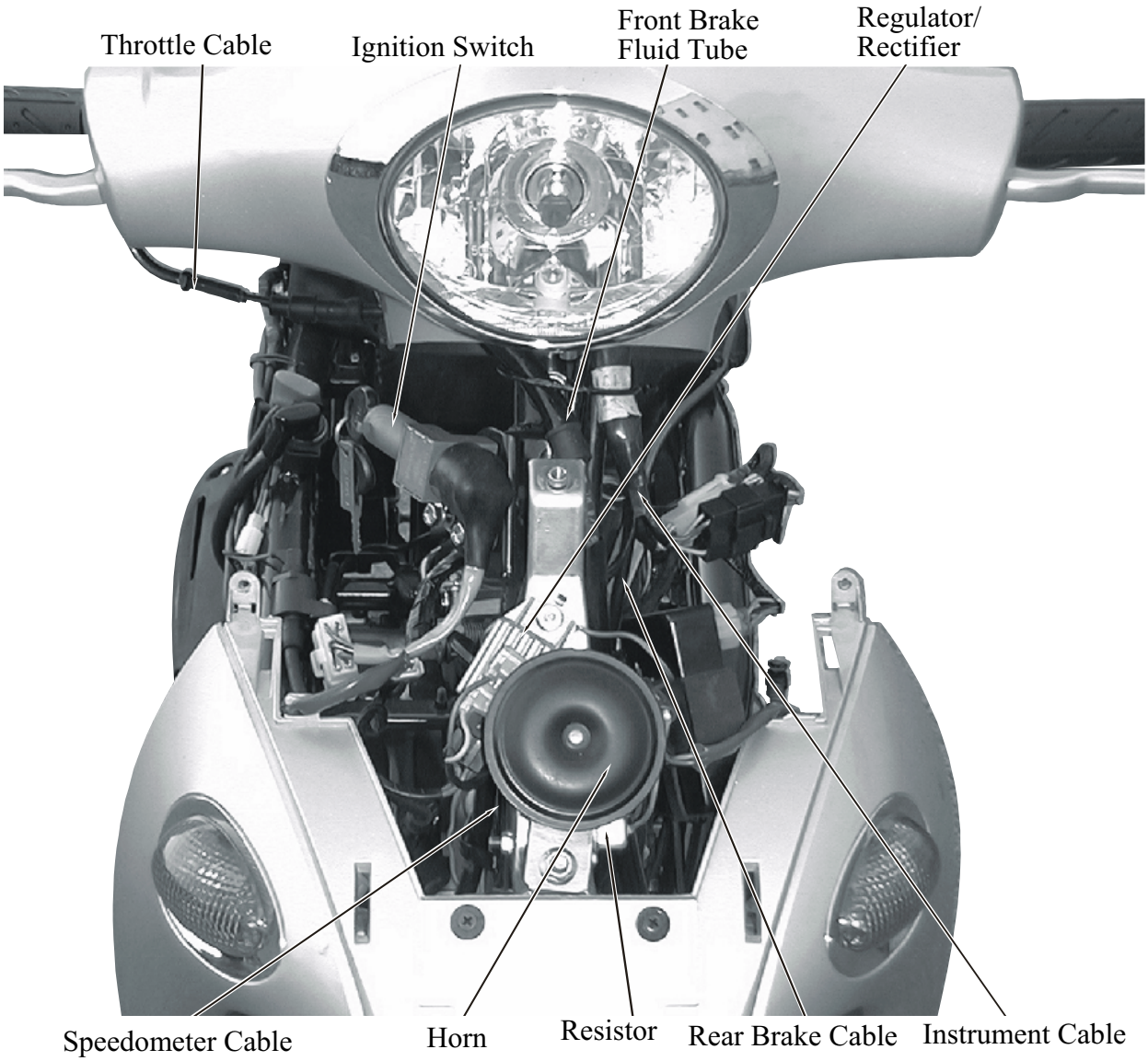
Lubrication Points	Lubricant
Valve guide/valve stem movable part Cam lobes Valve rocker arm friction surface Cam chain Cylinder lock bolt and nut Piston surroundings and piston ring grooves Piston pin surroundings Cylinder inside wall Connecting rod/piston pin hole Connecting rod big end Crankshaft right side oil seal Crankshaft one-way clutch movable part Oil pump drive chain Starter reduction gear engaging part Countershaft gear engaging part Final gear engaging part Bearing movable part O-ring face Oil seal lip	•Genuine KYMCO Engine Oil (SAE15W-40) •API SE, SF or SG Engine Oil
Starter idle gear Friction spring movable part/shaft movable part Shaft movable grooved part Starter spindle movable part	High-temperature resistant grease
Starter one-way clutch threads	Thread locking agent
A.C. generator connector Transmission case breather tube	Adhesive

FRAME

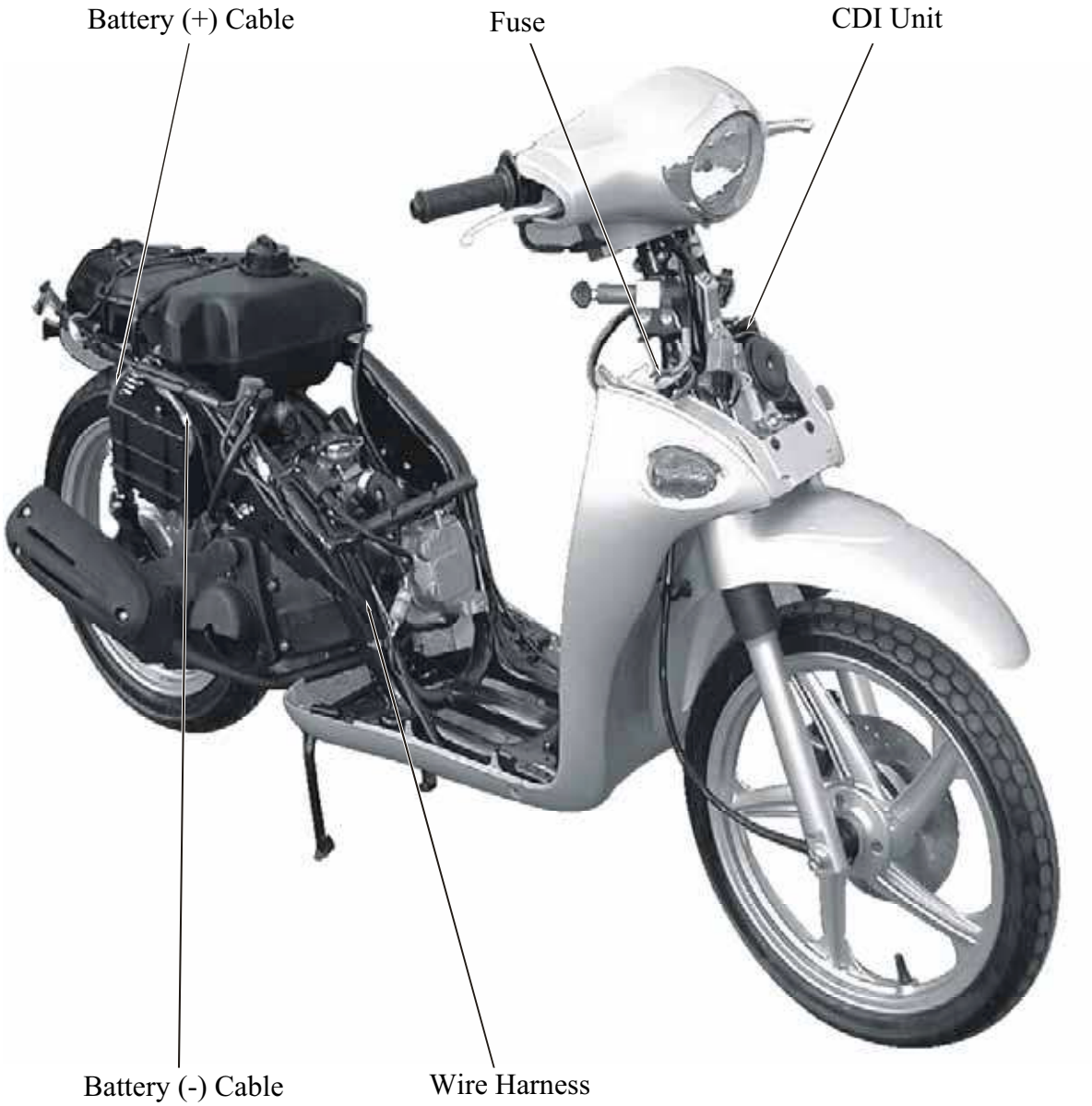
The following is the lubrication points for the frame.
Use general purpose grease for parts not listed.
Apply clean engine oil or grease to cables and movable parts not specified. This will avoid abnormal noise and rise the durability of the motorcycle.

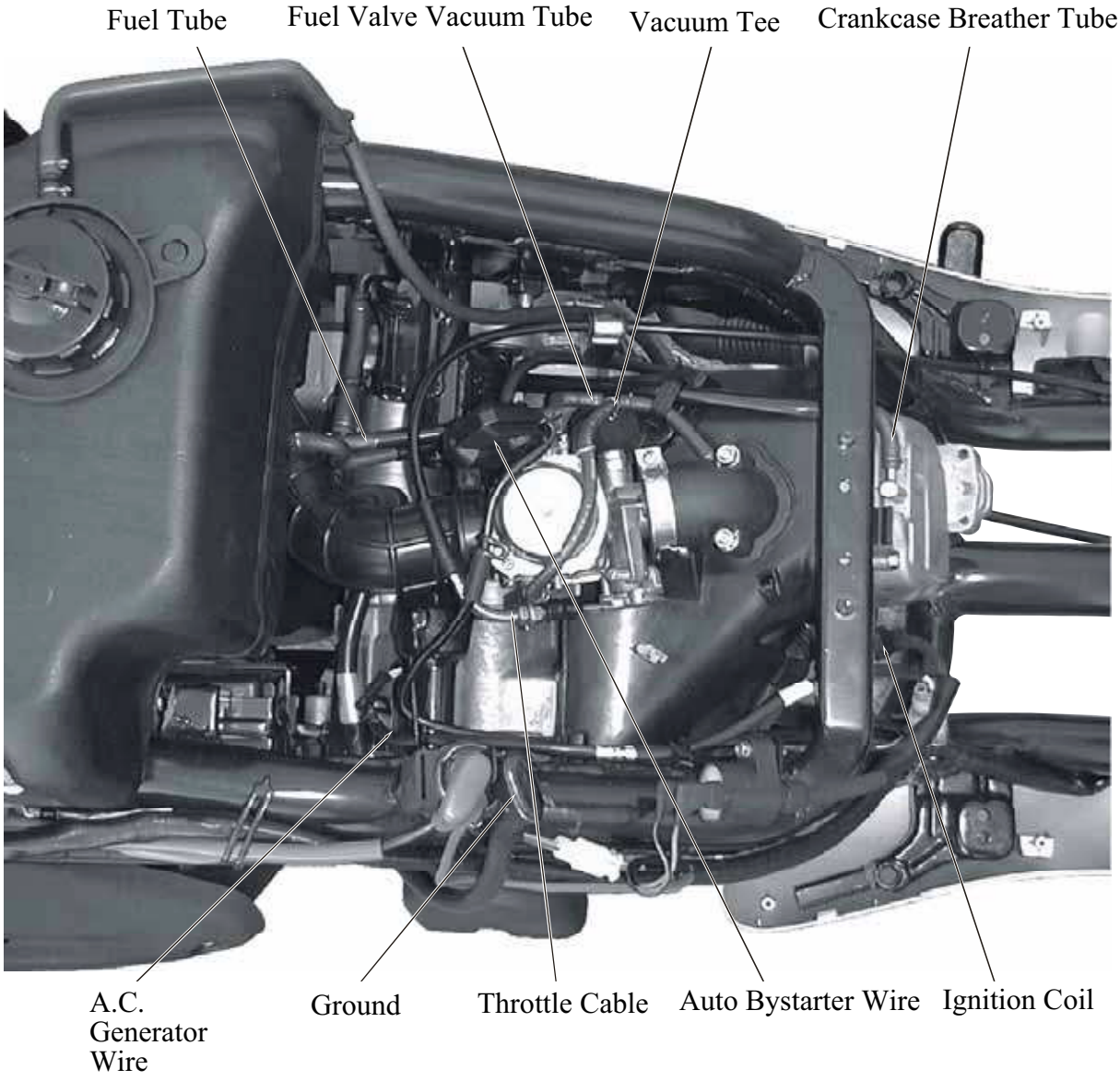


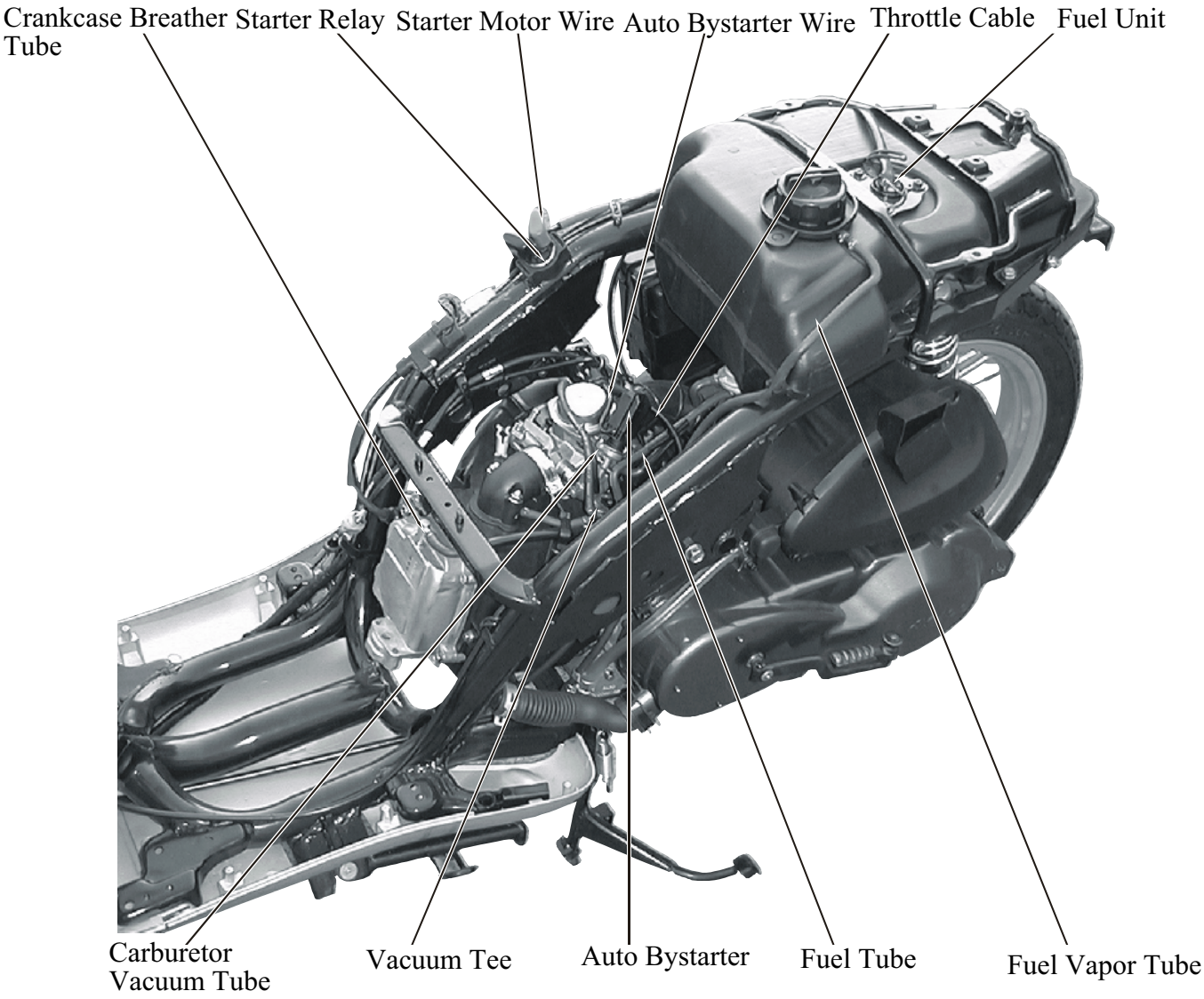
CABLE & HARNESS ROUTING



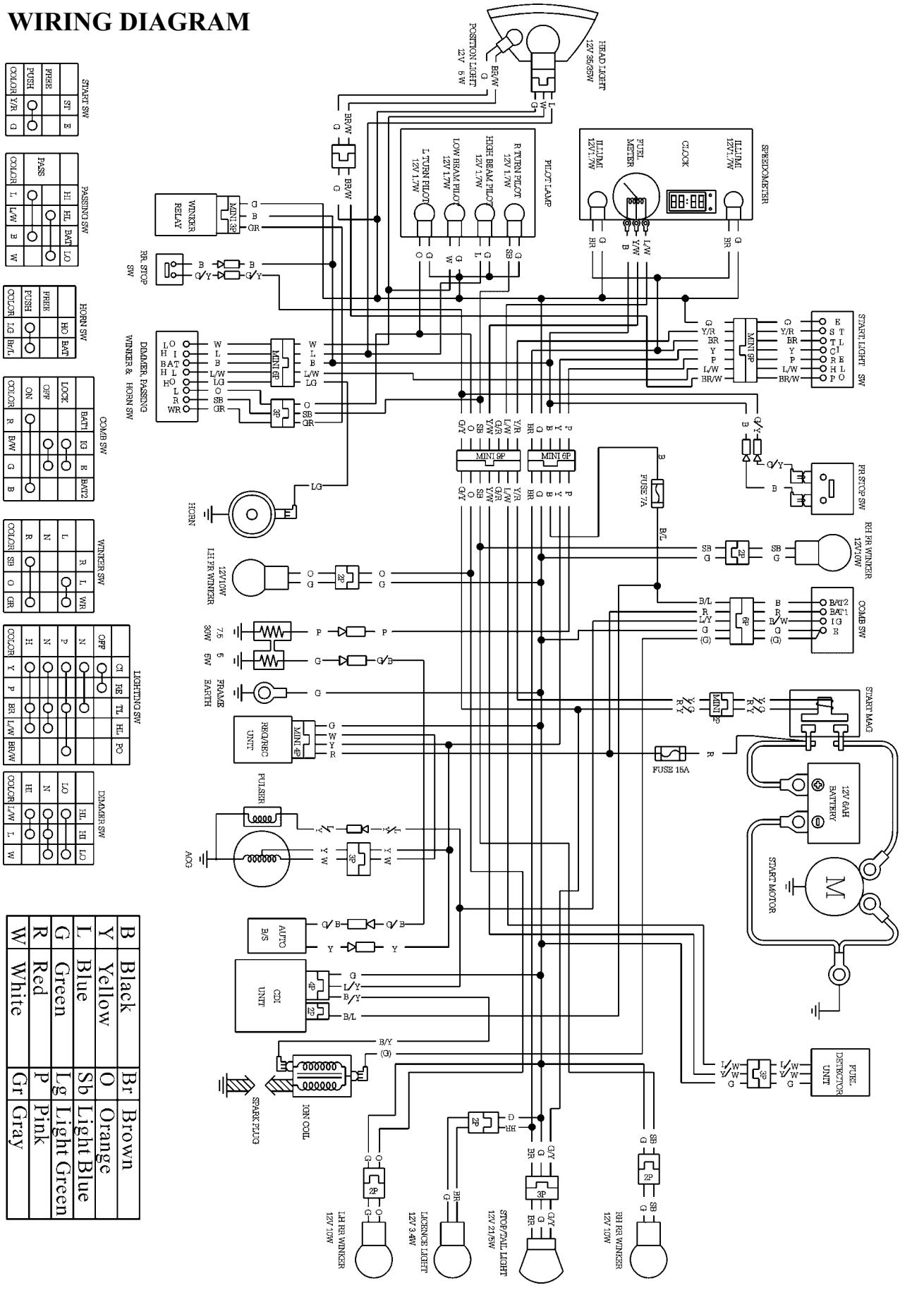
C.D.I. unit
Throttle Cable
Wire Harness
Front Brake Fluid Tube
Resistor
Rear Brake Cable


Battery (+) Cable
Fuse
CDI Unit
Battery (-) Cable
Wire Harness


Fuel Tube
Fuel Valve Vacuum Tube
Vacuum Tee
Crankcase Breather Tube
A.C. Generator Wire
Ground
Throttle Cable
Auto Bystarter Wire
Ignition Coil

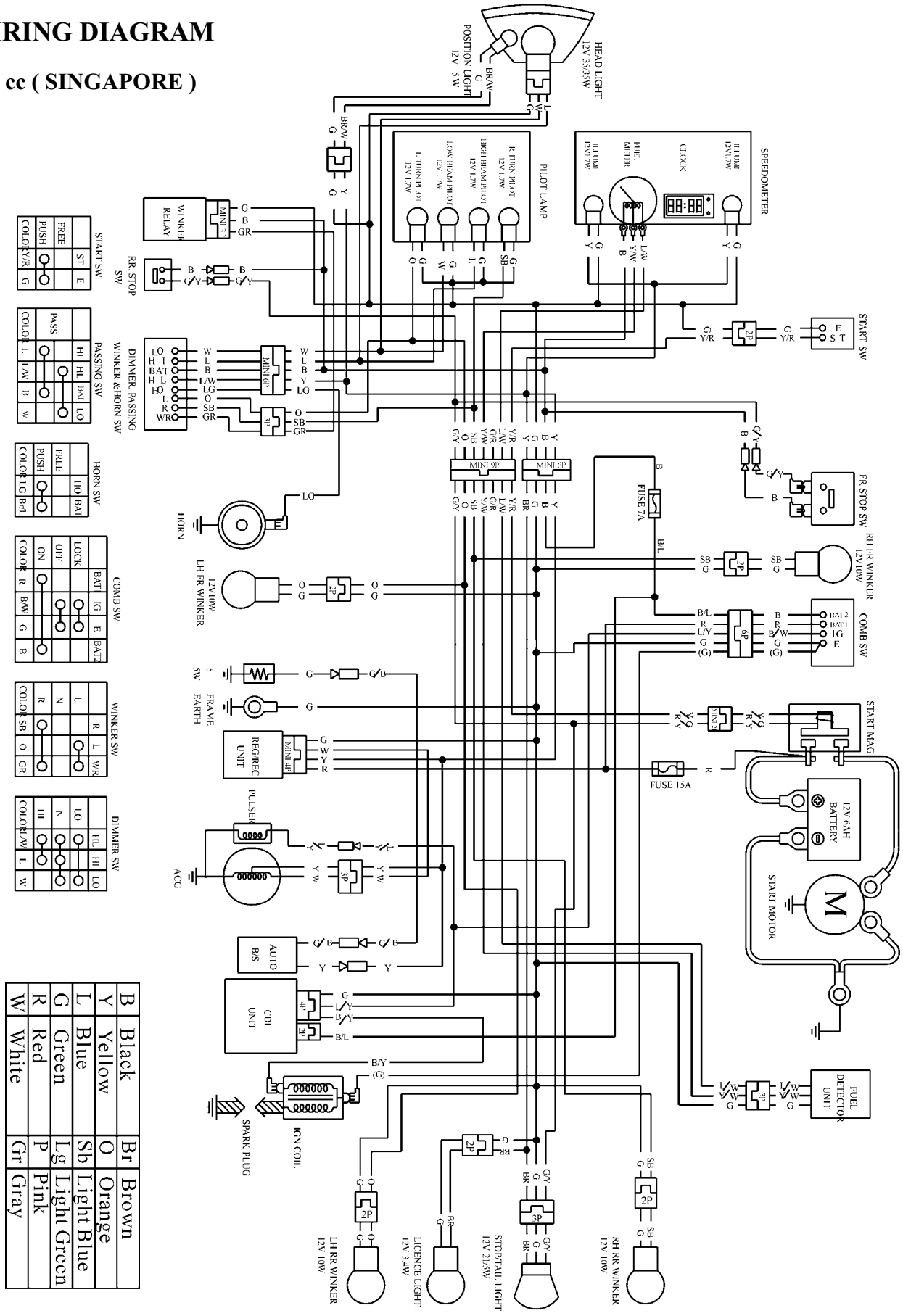

Crankcase Breather Tube
Starter Relay
Starter Motor Wire
Auto Bystarter Wire
Throttle Cable
Fuel Unit
Carburetor Vacuum Tube
Vacuum Tee
Auto Bystarter
Fuel Tube
Fuel Vapor Tube

WIRING DIAGRAM



WIRING DIAGRAM

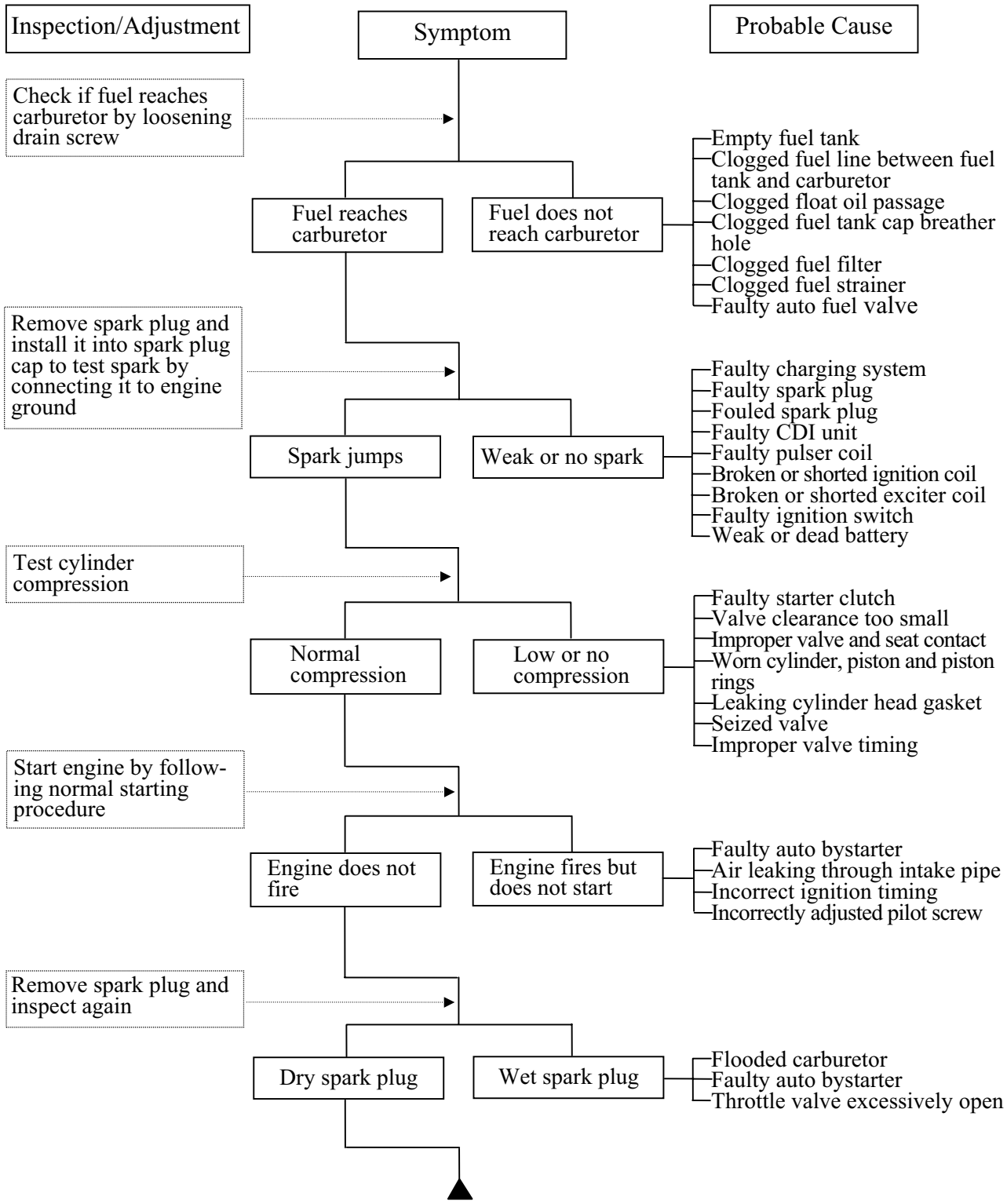
150 cc (SINGAPORE)



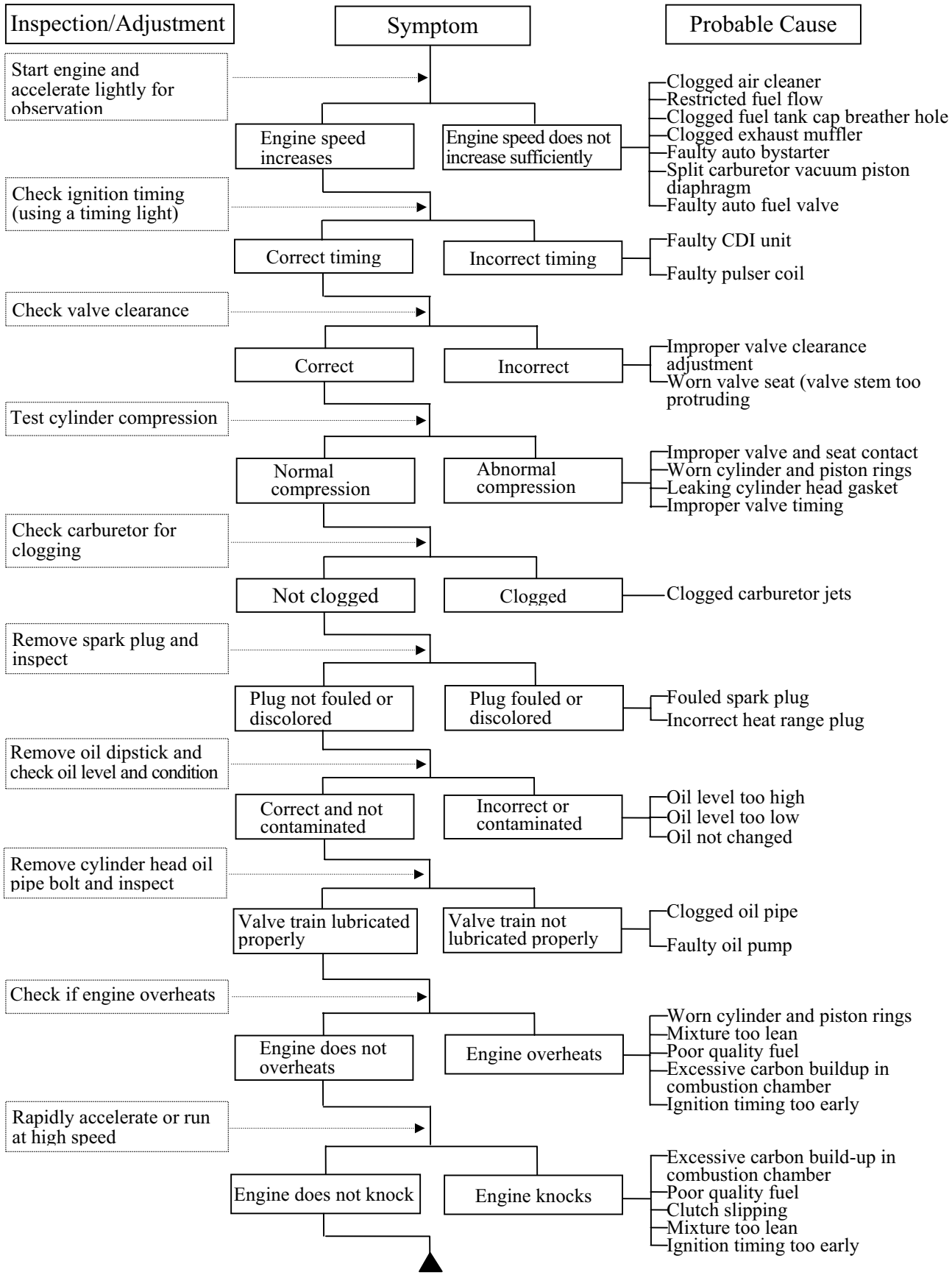
B	Black
Y	Yellow
L	Blue
G	Green
R	Red
W	White
Br	Brown
O	Orange
Sb	Light Blue
Lg	Light Green
P	Pink
Gr	Gray

TROUBLESHOOTING

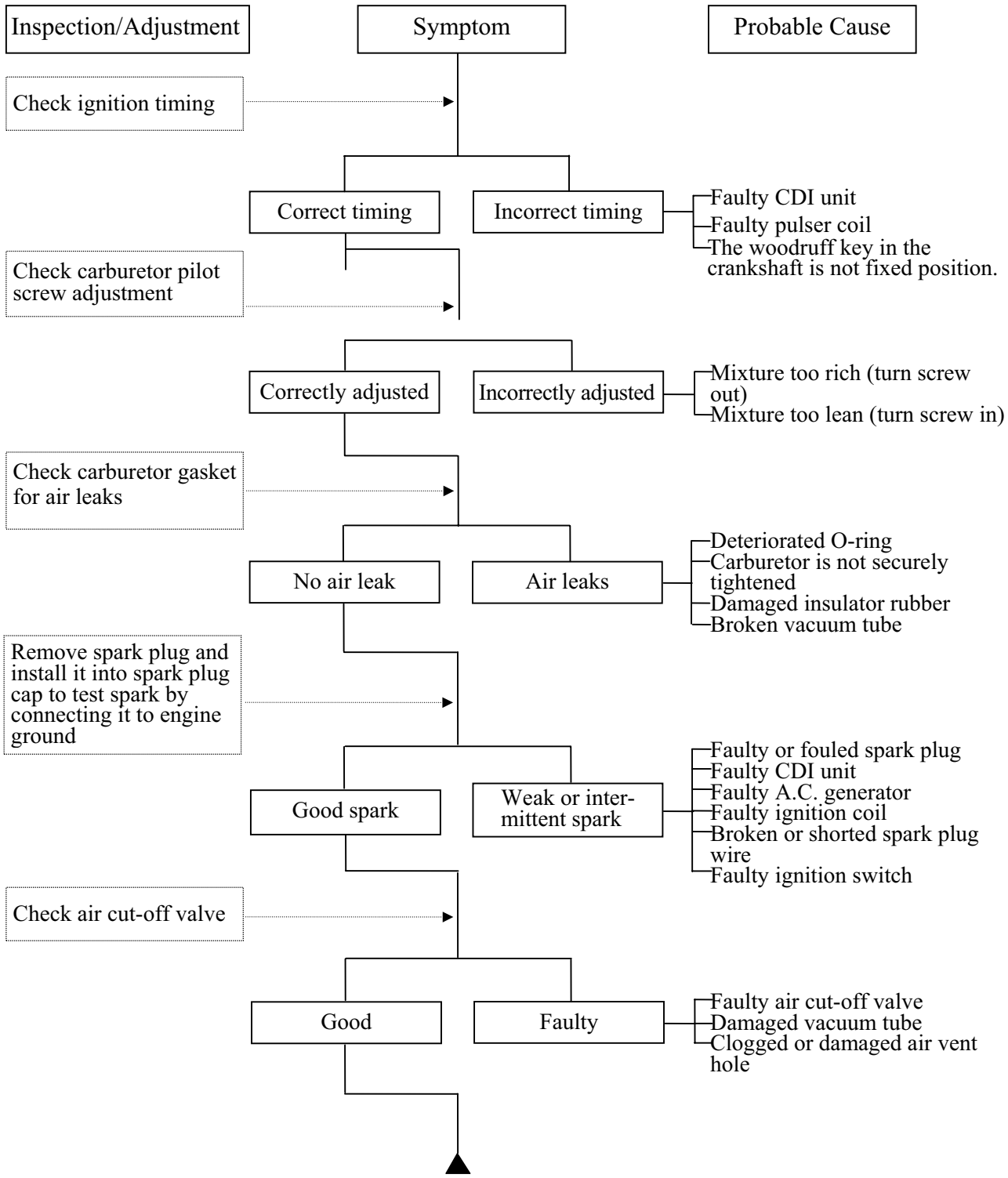
ENGINE WILL NOT START OR IS HARD TO START


Inspection/Adjustment
Symptom
Probable Cause
Check if fuel reaches carburetor by loosening drain screw
Fuel reaches carburetor
Fuel does not reach carburetor
Empty fuel tank
Clogged fuel line between fuel tank and carburetor
Clogged float oil passage
Clogged fuel tank cap breather hole
Clogged fuel filter
Clogged fuel strainer
Faulty auto fuel valve
Remove spark plug and install it into spark plug cap to test spark by connecting it to engine ground
Spark jumps
Weak or no spark
Faulty charging system
Faulty spark plug
Fouled spark plug
Faulty CDI unit
Faulty pulser coil
Broken or shorted ignition coil
Broken or shorted exciter coil
Faulty ignition switch
Weak or dead battery
Test cylinder compression
Normal compression
Low or no compression
Faulty starter clutch
Valve clearance too small
Improper valve and seat contact
Worn cylinder, piston and piston rings
Leaking cylinder head gasket
Seized valve
Improper valve timing
Start engine by following normal starting procedure
Engine does not fire
Engine fires but does not start
Faulty auto bystarter
Air leaking through intake pipe
Incorrect ignition timing
Incorrectly adjusted pilot screw
Remove spark plug and inspect again
Dry spark plug
Wet spark plug
Flooded carburetor
Faulty auto bystarter
Throttle valve excessively open

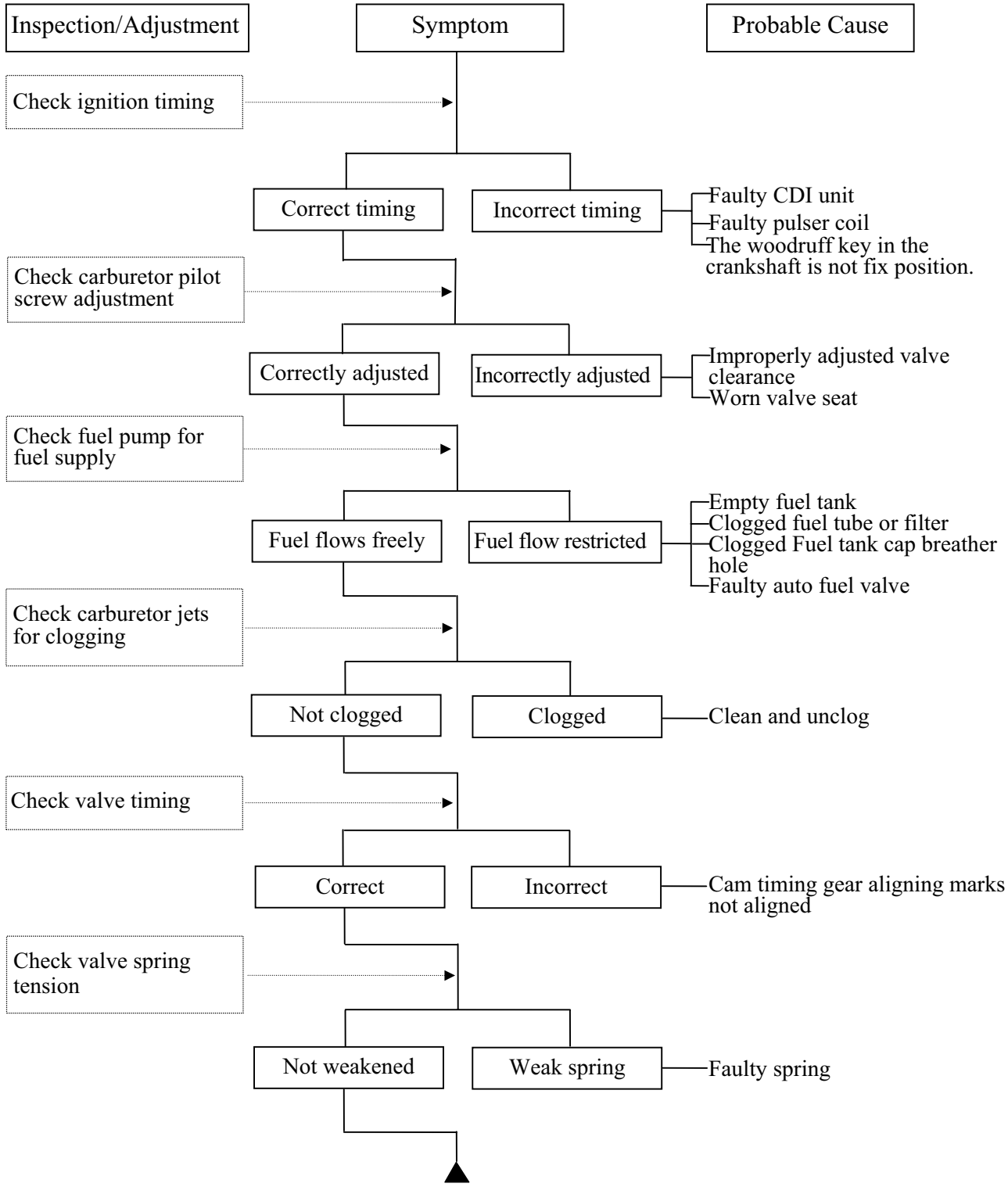
ENGINE LACKS POWER



POOR PERFORMANCE (ESPECIALLY AT IDLE AND LOW SPEEDS)

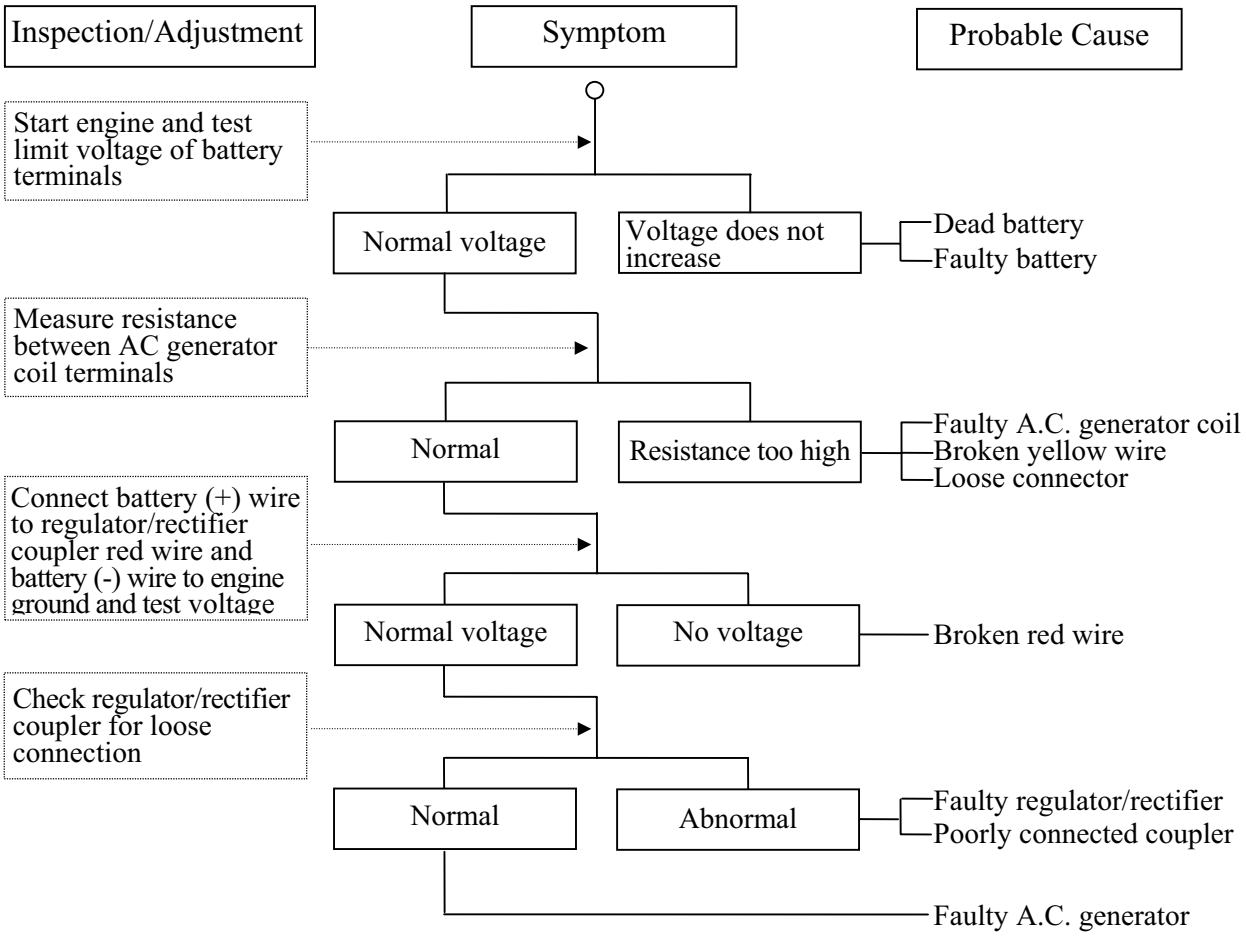


POOR PERFORMANCE (AT HIGH SPEED)

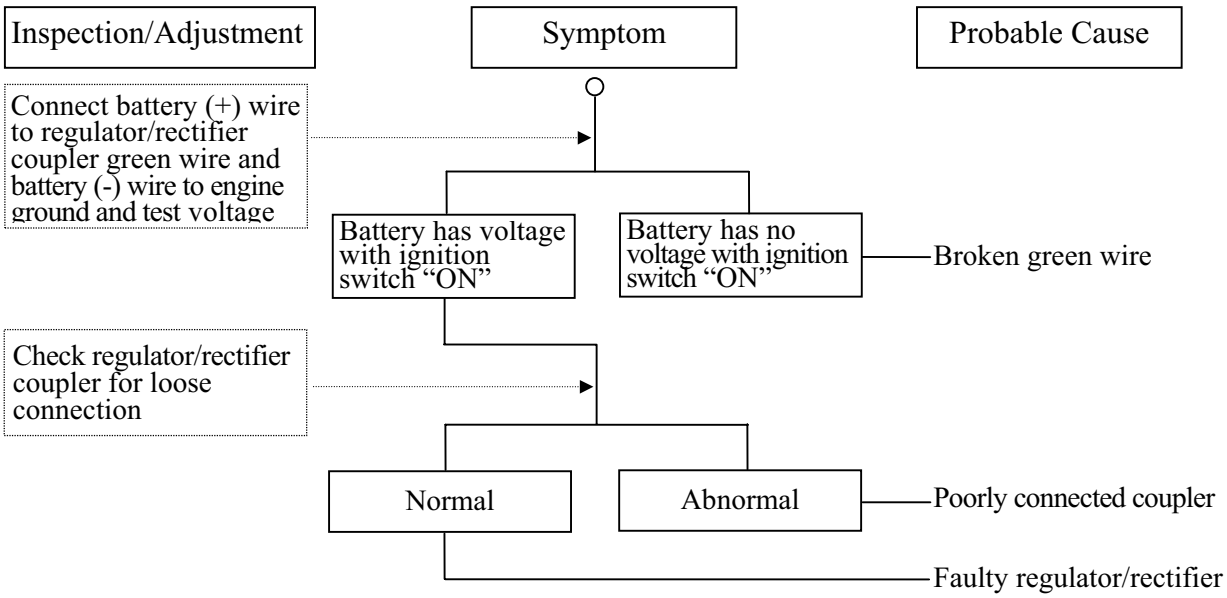


POOR CHARGING (BATTERY OVER DISCHARGING OR OVERCHARGING)

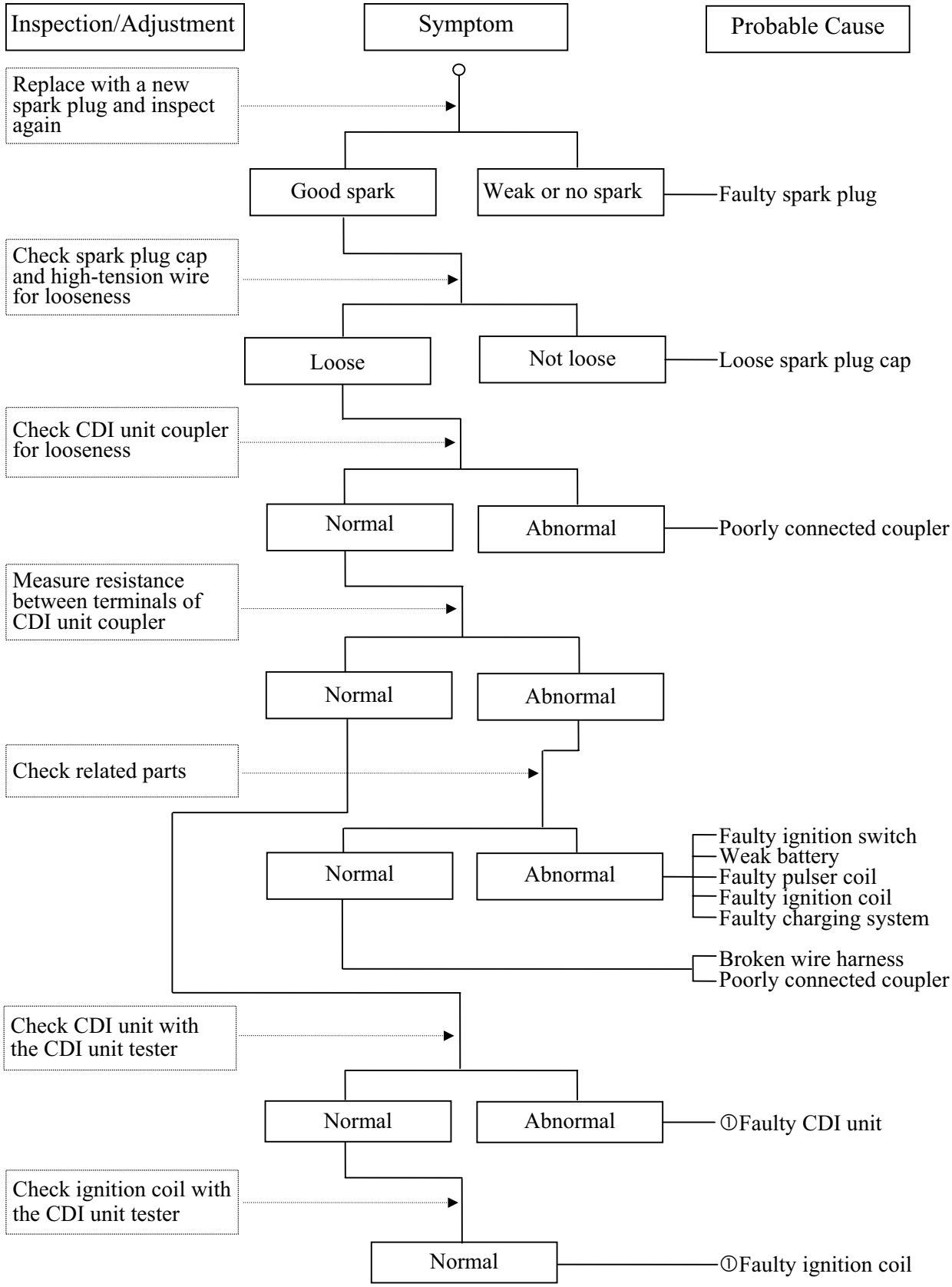
Undercharging



Overcharging


Inspection/Adjustment
Symptom
Probable Cause
Connect battery (+) wire to regulator/rectifier coupler green wire and battery (-) wire to engine ground and test voltage
Battery has voltage with ignition switch "ON"
Battery has no voltage with ignition switch "ON"
Broken green wire
Check regulator/rectifier coupler for loose connection
Normal
Abnormal
Poorly connected coupler
Faulty regulator/rectifier

NO SPARK AT SPARK PLUG

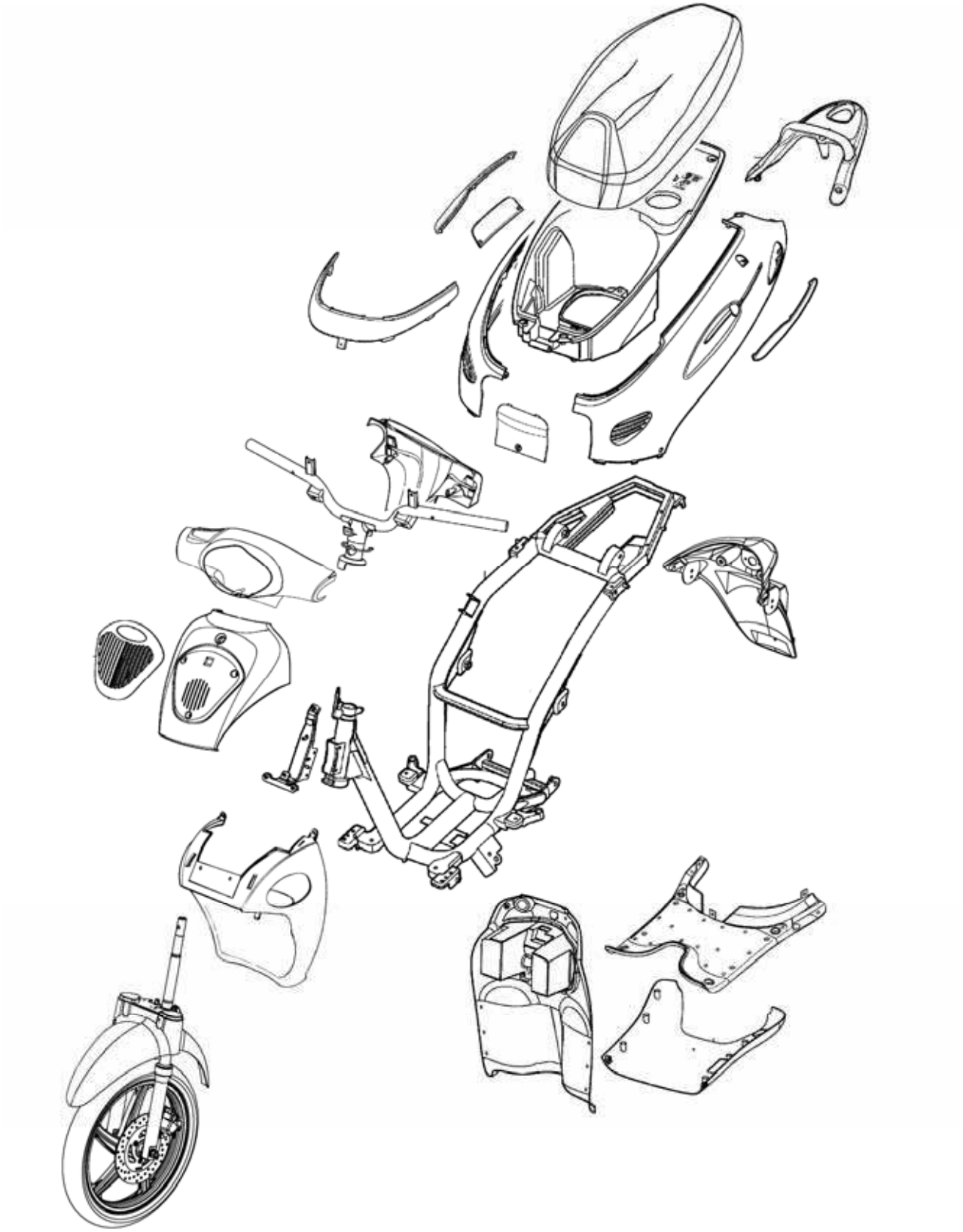


2

FRAME COVERS/EXHAUST MUFFLER

FRAME COVERS LAYOUT ---------- 2-1
SERVICE INFORMATION ---------- 2-2
TROUBLESHOOTING ---------- 2-2
FRAME COVERS ---------- 2-4

FRAME COVERS LAYOUT



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- When removing frame covers, use special care not to pull them by force because the cover joint claws may be damaged.
- Make sure to route cables and harnesses according to the Cable & Harness Routing.

TORQUE VALUES

Exhaust muffler lock bolt	3.5kg-m
Exhaust muffler joint lock nut	1.2kg-m

TROUBLESHOOTING

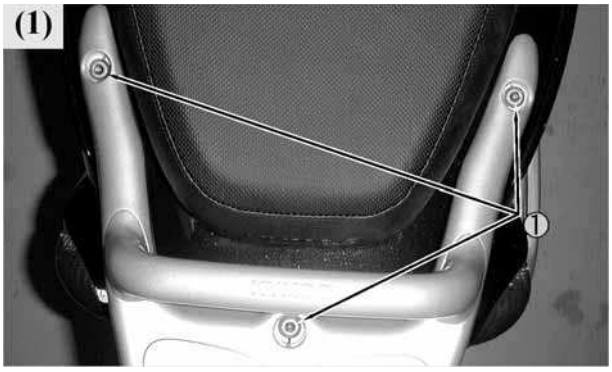
Noisy exhaust muffler

- Damaged exhaust muffler
- Exhaust muffler joint air leaks

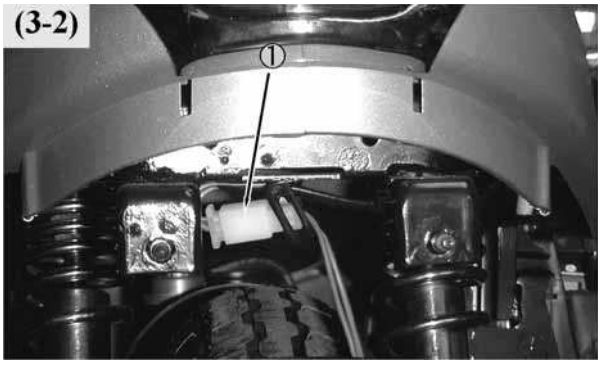
Lack of power

- Caved exhaust muffler
- Exhaust muffler air leaks
- Clogged exhaust muffler

(1)

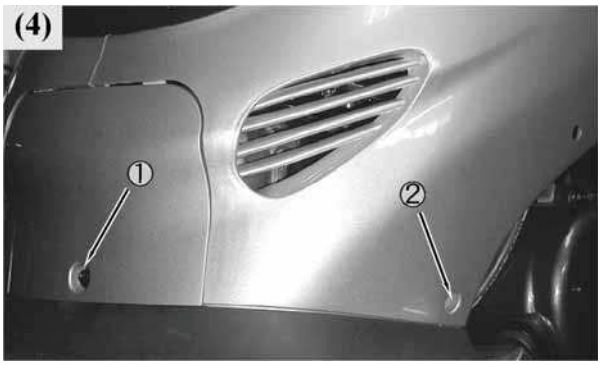


(3-2)



(2)

(4)



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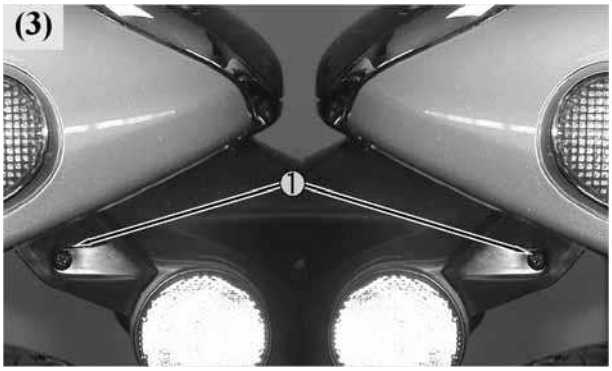
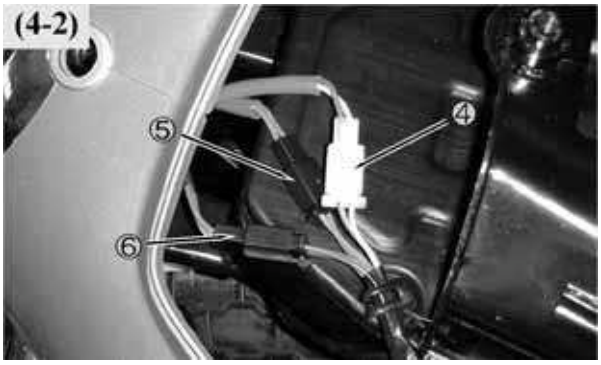
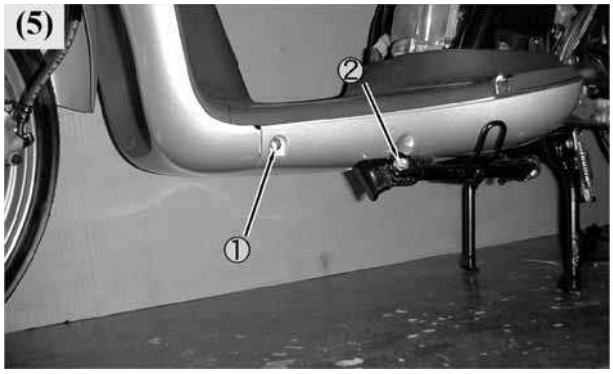


(4-1)

(3-1)

(4-2)





FRAME COVERS

(1) REAR HAND GRIP REMOVAL

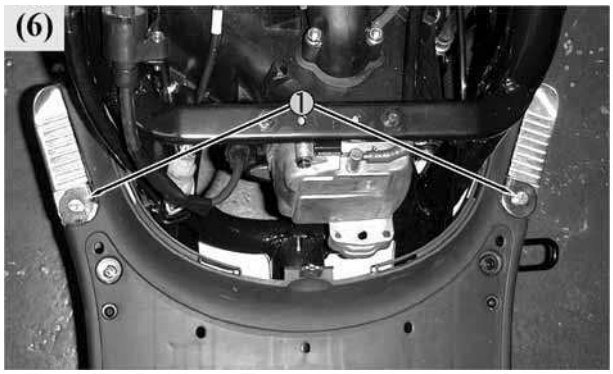
Remove ① the three bolts attaching the rear hand grip.

Remove the rear hand grip.

(2) MET-IN BOX REMOVAL

Remove ① the three bolts and ② two nuts attaching the met-in box.

Remove the met-in box.



(3) REAR FENDER REMOVAL

Remove ① the screw on each side of the rear fender.

Remove (3-1) ② the two nuts attaching the rear fender.

Remove the rear fender.

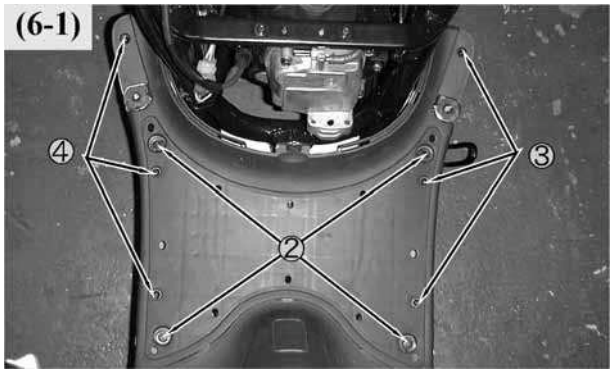
Remove (3-2) ③ the license light wire connector.

(4) UNDER COVERS REMOVAL

Remove ① the frame center cover screws.

Remove ② ③ the two screws attaching the part of the frame body cover.

Remove (4-2) ④ taillight ⑤ ⑥ rear turn signal light wire connector.



(5) BOTTOM COVER REMOVAL

Remove ① the one bolt attaching each side of the bottom protector cover.

Remove ② the bolt on site stand.

(6) FLOOP BOARD REMOVAL

Remove ① the two bolts attaching the rear floor board.

Remove (6-1) ② the four bolts attaching the floor board.

Remove ③ ④ the six screws attaching the floor board.

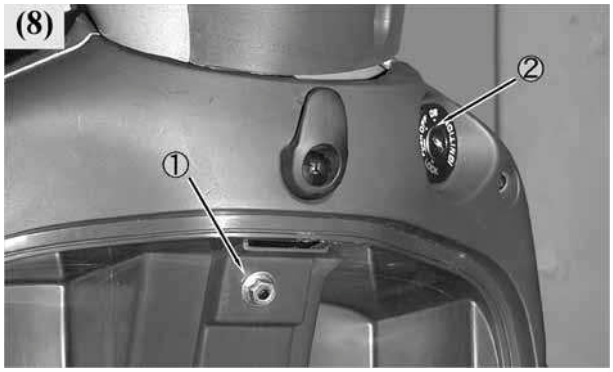
Remove the floor board.

(7) FRONT COVER REMOVAL

Remove ① the bolt on the front of the front cover.

Remove the front cover.

(8)



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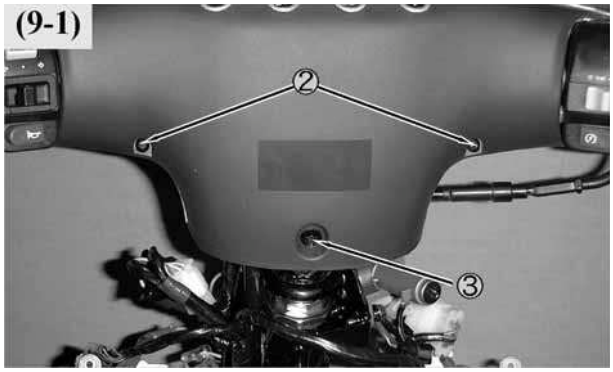
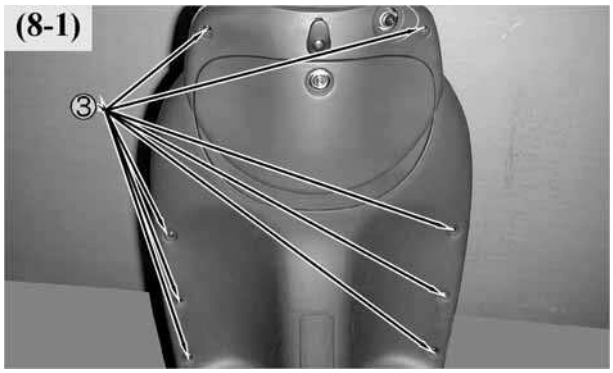
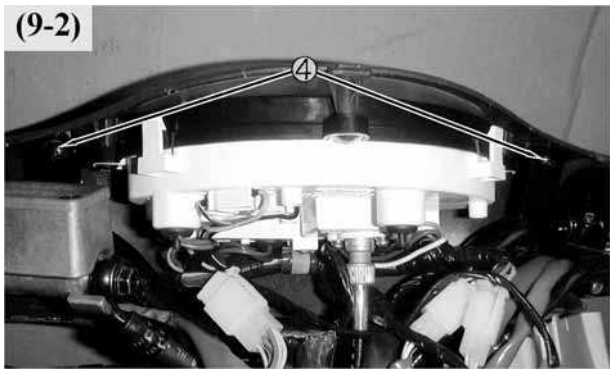


(8-1)



(9-2)



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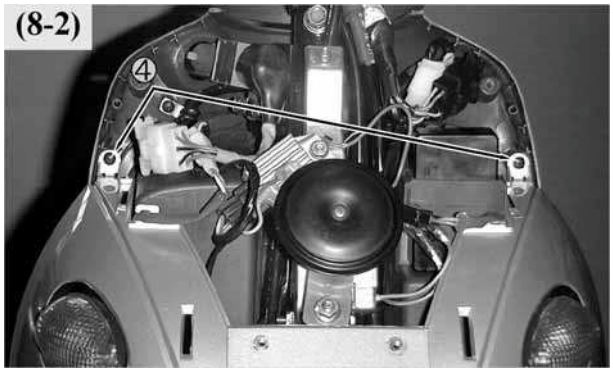
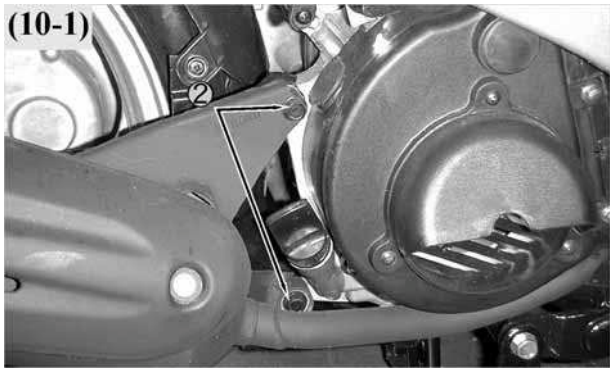


(10)

(9)

(10-1)



(8) FRONT TOOL BOX REMOVAL

Remove ① the nut attaching the front tool box.

Remove ② the ignition switch decorative ring.

Remove (8-1) ③ the six screws that combine the front cover with the front tool box.

Remove (8-2) ④ the two screws attaching the front cover.

Remove the front tool box.

(9) HANDLEBAR COVER REMOVAL

Remove ① the handlebar front cover bolt.

Remove (9-1) ② the two screws attaching the handlebar rear cover.

Disconnect the headlight wire connector and remove the handlebar front cover.

Remove ③ the bolt attaching the handlebar rear cover.

Remove (9-2) ④ two screws inside the handlebar rear cover.

The installation sequence the reverse of removal.

(10) EXHAUST MUFFLER REMOVAL

Remove ① the two exhaust muffler joint lock nuts.

Remove (10-1) ② the two exhaust muffler lock bolts to remove the exhaust muffler.

Remove the exhaust muffler joint packing collar.

When installing, first install the exhaust muffler packing collar onto the engine and then install the exhaust muffler.

Torques:

Exhaust muffler lock bolt:3.5kg-m

Exhaust muffler joint lock nut:1.2kg-m

3

INSPECTION/ADJUSTMENT

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WHEELS/TIRES 3-10

SERVICE INFORMATION

GENERAL

⚠ WARNING

- Before running the engine, make sure that the working area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas which may cause death to people.
- Gasoline is extremely flammable and is explosive under some conditions. The working area must be well-ventilated and do not smoke or allow flames or sparks near the working area or fuel storage area.

SPECIFICATIONS

ENGINE

Throttle grip free play : 2～6mm
Spark plug gap : 0.6～0.7mm
Spark plug: Standard : NGK C7HSA
Valve clearance : IN: 0.12mm
EX: 0.12mm
Idle speed : 1700±100rpm
Engine oil capacity:
At disassembly : 0.91 liter
At change : 0.81 liter
Gear oil capacity :
At disassembly : 210cc
At change : 180cc

Cylinder compression (125/150) : (13/15)kg/cm^2
Ignition timing : BTDC 15°~28°±2°/1700±100rpm

BODY

Front brake free play: 10～20mm
Rear brake free play: 10～20mm

TIRE PRESSURE

	1 Rider	2 Riders
Front	1.75kg/cm^2	1.75kg/cm^2
Rear	2.00kg/cm^2	2.25kg/cm^2

TIRE SIZE:

Front : 80/80-16 45P
Rear : 100/80-16 56P

TORQUE VALUES

Front axle nut 6.0kg-m
Rear axle nut 11.0kg-m

MAINTENANCE SCHEDULE

Perform the periodic maintenance at each scheduled maintenance period.
I: Inspect, and Clean, Adjust, Lubricate or Replace if necessary.
A: Adjust C: Clean R: Replace T : Tighten

Item \ Frequency	Whichever comes first ⇨ ⇩	Regular Service Mileage (km)											
		1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
Engine oil		R New motorcycle 300km	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter screen					C				C				
Fuel filter screen											R		
Gear oil	Note 3	R New motorcycle 300km				R					R		
Valve clearance			A		A				A				A
Carburetor					I				I				C
Air Cleaner	Note 2,3	Replace at every 3000km											
Spark plug		Clean at every 2000km and replace if necessary											
Brake system		I	I	I	I	I	I	I	I	I	I	I	I
Drive belt									I				
Suspension					I				I				I
Nut, bolt, fastener									I				
Tire					I				I				I
Steering stem ball race		I					I						I

- In the interest of safety, we recommend these items should be serviced only by an authorized KYMCO motorcycle dealer.

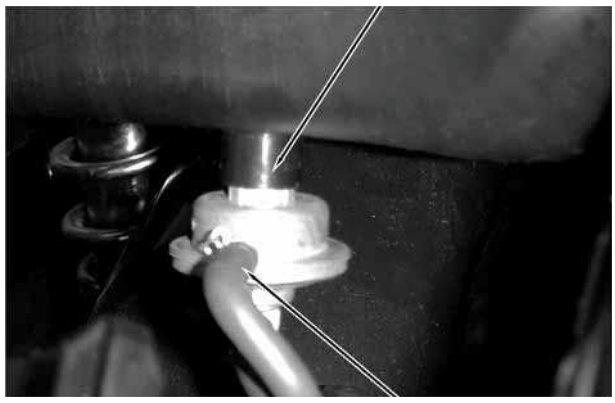
Note: 1. For higher odometer readings, repeat at the frequency interval established here.
2. Service more frequently when riding in dusty or rainy areas.
3. Service more frequently when riding in rain or at full throttle.

FUEL LINE

Remove the met-in box. (⇨2)
Check the fuel lines and replace any parts which show signs of deterioration, damage or leakage.

* Do not smoke or allow flames or sparks in your working area.

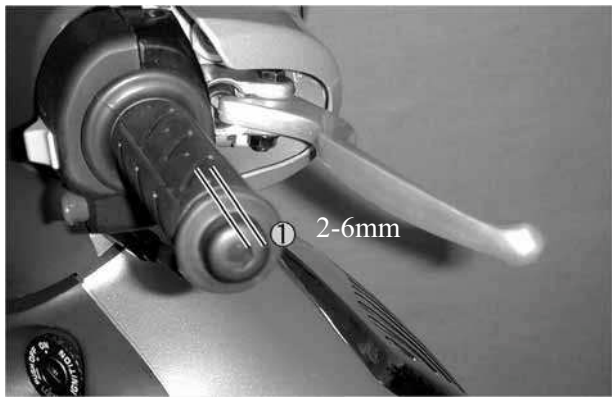
Fuel Filter



Fuel Line

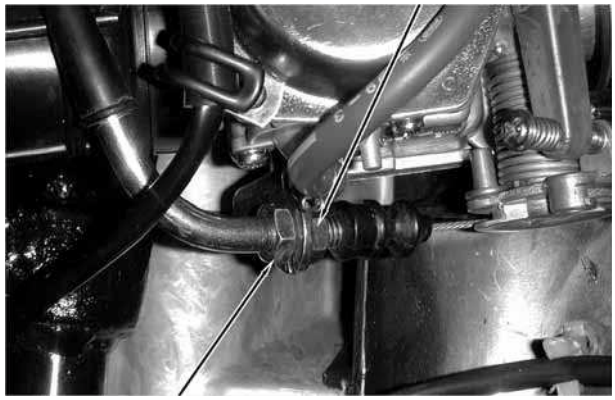
THROTTLE OPERATION

Check the throttle grip for smooth movement.
Measure the throttle grip free play.
Free Play: 2～6mm



Major adjustment of the throttle grip free play is made at the carburetor side.
Adjust by loosening the lock nut and turning the adjusting nut.

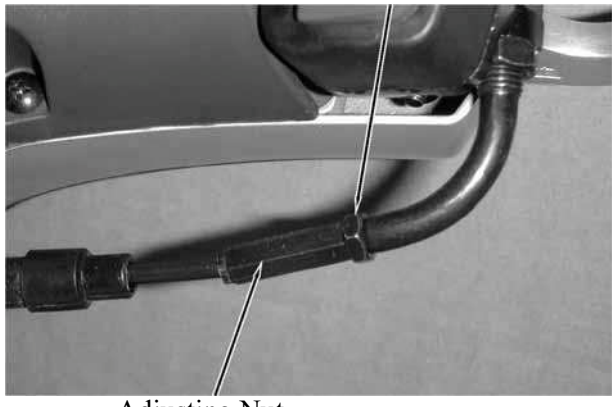
Lock Nut



Adjusting Nut

Minor adjustment is made with the adjusting nut at the throttle grip side.
Slide the rubber cover out and adjust by loosening the lock nut and turning the adjusting nut.

Lock Nut



Adjusting Nut

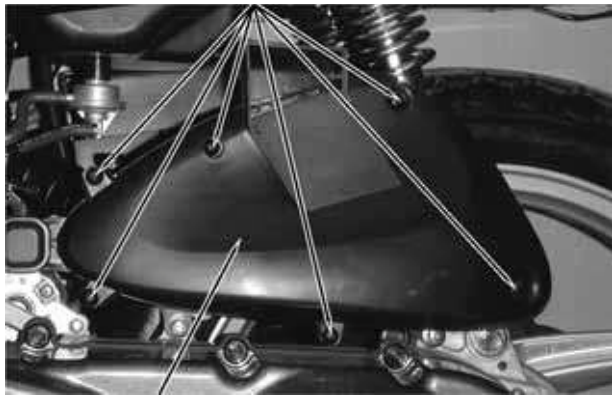
AIR CLEANER

AIR CLEANER REPLACEMENT

Remove the rear side covers. (⇨2)
Remove the six air cleaner case cover screws and the cover.

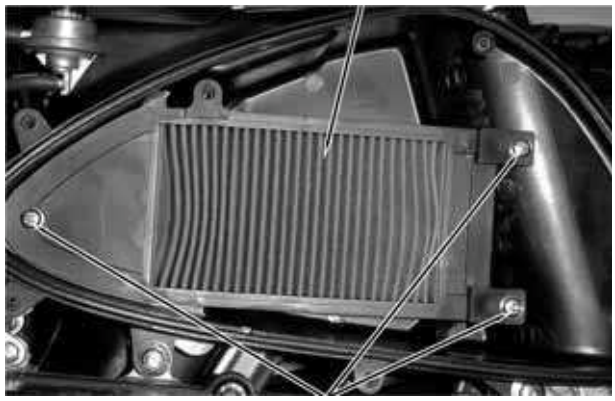
Remove the air cleaner element by removing the three screws.
Check the element and replace it if it is excessively dirty or damaged.

Screws



Air Cleaner Case Cover

Air Cleaner Element



Screws

CHANGE INTERVAL

More frequent replacement is required when riding in unusually dusty or rainy areas.

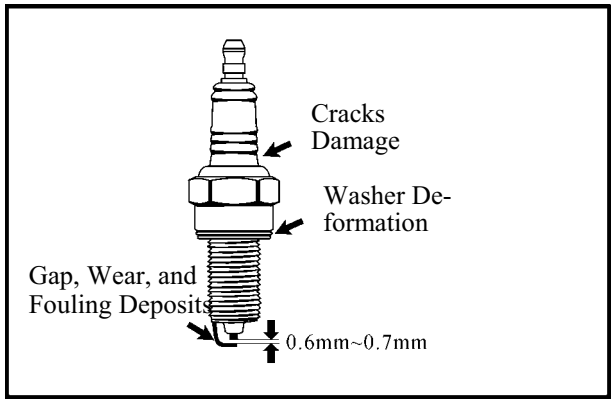
* • The air cleaner element has a viscous type paper element. Do not clean it with compressed air.
  • Be sure to install the air cleaner element and cover securely.

SPARK PLUG

Remove the spark plug.
Check the spark plug for wear and fouling deposits.
Clean any fouling deposits with a spark plug cleaner or a wire brush.
Specified Spark Plug: NGK C7HSA

Measure the spark plug gap.
Spark Plug Gap: 0.6～0.7mm

* When installing, first screw in the spark plug by hand and then tighten it with a spark plug wrench.

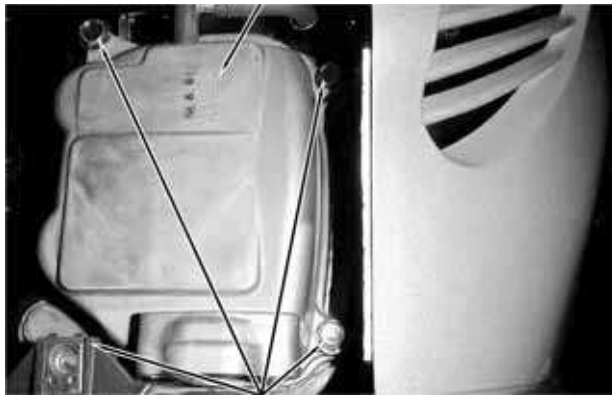


VALVE CLEARANCE

* Inspect and adjust valve clearance while the engine is cold (below 35℃).

Remove the center cover. (⇨2)
Remove the cylinder head cover. (⇨7-4)

Cylinder Head Cover



Bolts

Turn the flywheel counterclockwise so that the "T" mark on the flywheel aligns with the index mark on the crankcase to bring the round hole on the camshaft gear facing up to the top dead center on the compression stroke.

Valve Wrench

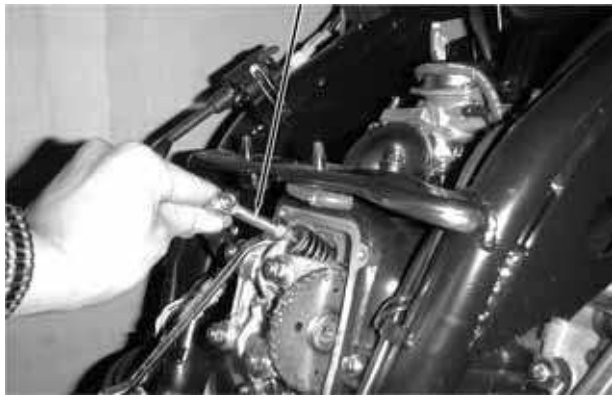
Inspect and adjust the valve clearance.

Valve Clearance: IN: 0.12mm
EX: 0.12mm

Loosen the lock nut and adjust by turning the adjusting nut

Special

Valve Wrench



* • Check the valve clearance again after the lock nut is tightened.

CARBURETOR IDLE SPEED

* • The engine must be warm for accurate idle speed inspection and adjustment.

Throttle Stop Screw

Remove the inspection cover.
Warm up the engine before this operation.
Start the engine and connect a tachometer.
Turn the throttle stop screw to obtain the specified idle speed.

Idle Speed: 1700±100rpm

When the engine misses or run erratic, adjust the pilot screw.

IGNITION TIMING

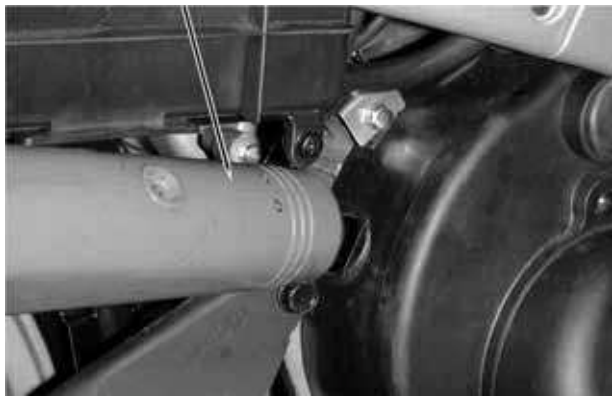
* The CDI unit is not adjustable. If the ignition timing is incorrect, check the ignition system. (⇨15-6)

Remove the rear right side cover.
Remove the timing hole cap.

Timing Hole Cap

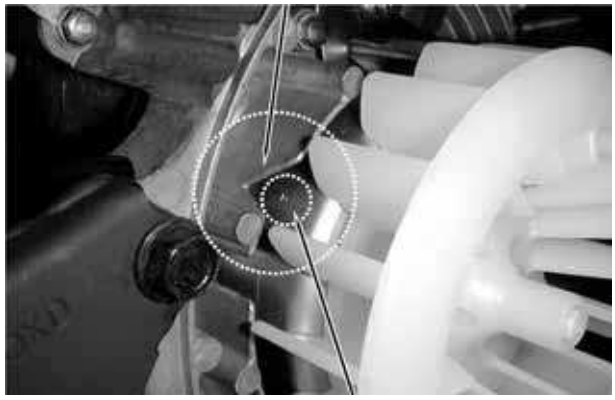
Check the ignition timing with a timing light.
When the engine is running at idle speed, the ignition timing is correct if the "F" mark on the flywheel aligns with the index mark on the crankcase.

Timing Light



Also use a timing light to check the advance mark.
Raise the engine speed to 5,000rpm and the index mark on the crankcase should be aligned with the advance mark on the flywheel.

Advance Mark



"F" Mark

CYLINDER COMPRESSION

Warm up the engine before compression test.
Remove the met-in box and frame center cover. (⇨2)
Remove the spark plug .
Insert a compression gauge.
Open the throttle valve fully and push the starter button to test the compression.

Compression: 12.8kg/cm^2-570rpm

If the compression is low, check for the following:

- Leaky valves
- Valve clearance to small
- Leaking cylinder head gasket
- Piston rings are worn out.
- Piston/cylinder is worn out.

If the compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and the piston head.

Compression Gauge

FINAL REDUCTION GEAR OIL

OIL LEVEL CHECK

* Place the motorcycle on its main stand on level ground for oil level check.

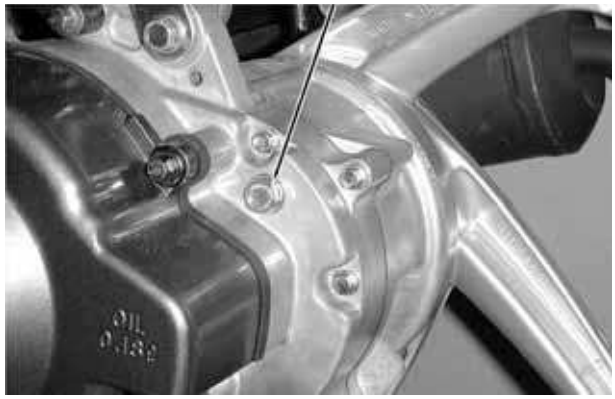
Stop the engine and remove the oil check bolt.
The oil level shall be at the oil check bolt hole.
If the oil level is low, add the recommended oil to the proper level.

Recommended Oil:
GEAR OIL VISCOSITY SAE90#

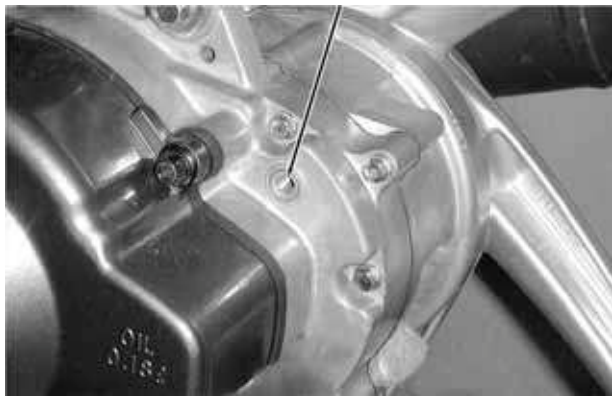
Install the oil check bolt.

* Make sure that the sealing washer is in good condition.

Oil Check Bolt



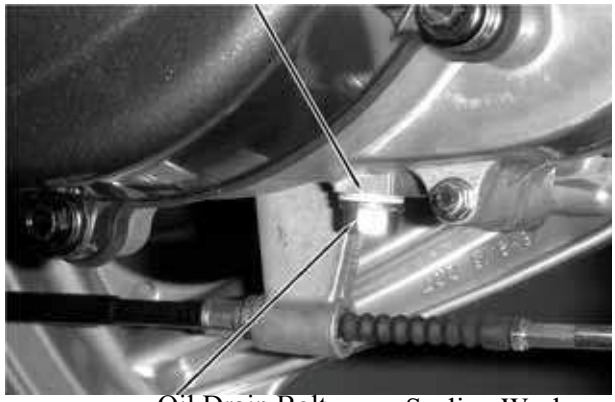
Oil Check Bolt Hole



OIL CHANGE

Remove the oil check bolt.
Remove the oil drain bolt and drain the oil thoroughly.
Install the oil drain bolt.
Torque: 1.0kg-m

* Make sure that the sealing washer is in good condition.

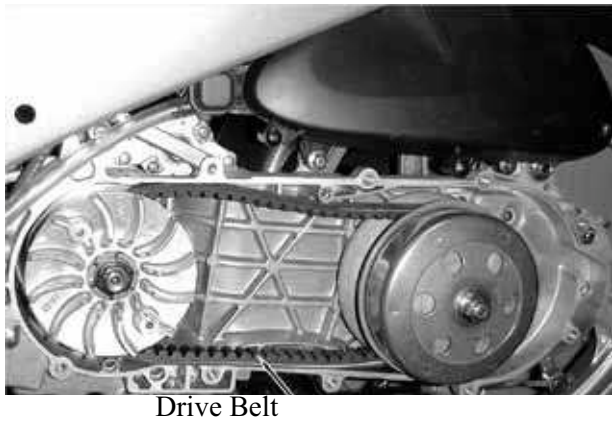


Oil Drain Bolt Sealing Washer

Fill with the recommended oil.
Oil Capacity: At disassembly : 210cc
At change : 180cc
Reinstall the oil check bolt and check for oil leaks.
Torque: 1.2kg-m

DRIVE BELT

Remove the left crankcase cover. (⇨9-3)
Inspect the drive belt for cracks or excessive wear.
Replace the drive belt with a new one if necessary and in accordance with the Maintenance Schedule.



Drive Belt

BRAKE SHOE

Replace the brake shoes if the arm can not be aligned with the ＞ mark on the brake panel when the brake is fully applied.
Refer to page (⇨13-4) for brake shoe replacement.

BRAKE SYSTEM

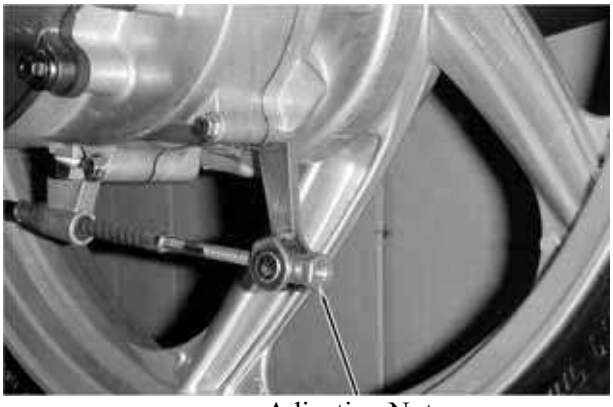
FRONT BRAKE

Measure the front brake lever free play.
Free Play: 10～20mm

REAR BRAKE

Measure the rear brake lever free play.
Free Play: 10～20mm

If the free play do not fall within the limit, adjust by turning the adjusting nut.



Adjusting Nut

HEADLIGHT AIM

Turn the ignition switch ON and start the engine.
Turn on the headlight switch.
Adjust the headlight aim by turning the headlight aim adjusting screw.

Adjusting Nut

SUSPENSION

FRONT

Fully apply the front brake lever and check the action of the front shock absorbers by compressing them several times.
Check the entire shock absorber assembly for oil leaks, looseness or damage.

REAR

Check the action of the rear shock absorber by compressing it several times.
Check the entire shock absorber assembly for oil leaks, looseness or damage.
Jack the rear wheel off the ground and move the rear wheel sideways with force to see if the engine hanger bushings are worn.

STEERING HANDLEBAR

Raise the front wheel off the ground and check that the steering handlebar rotates freely.
If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering stem ball race. (⇨12-15)

NUTS/BOLTS/FASTENERS

Check all important chassis nuts and bolts for looseness.
Tighten them to their specified torque values if any looseness is found. (⇨1-11)

WHEELS/TIRES

Check the tires for cuts, imbedded nails or other damages.

Check the tire pressure.

* Tire pressure should be checked when tires are cold.

TIRE PRESSURE

	1 Rider	2 Riders
Front	1.75kg/cm^2	1.75kg/cm^2
Rear	2.00kg/cm^2	2.25kg/cm^2

TIRE SIZE

Front: 80/80-16 45P
Rear : 100/80-16 56P

Front Axle Nut

Check the front axle nut for looseness.
Check the rear axle nut for looseness.
If the axle nuts are loose, tighten them to the specified torques.

Torques: **Front** : 6.0kg-m
Rear : 11.0kg-m

4

LUBRICATION SYSTEM

SERVICE INFORMATION 4-2

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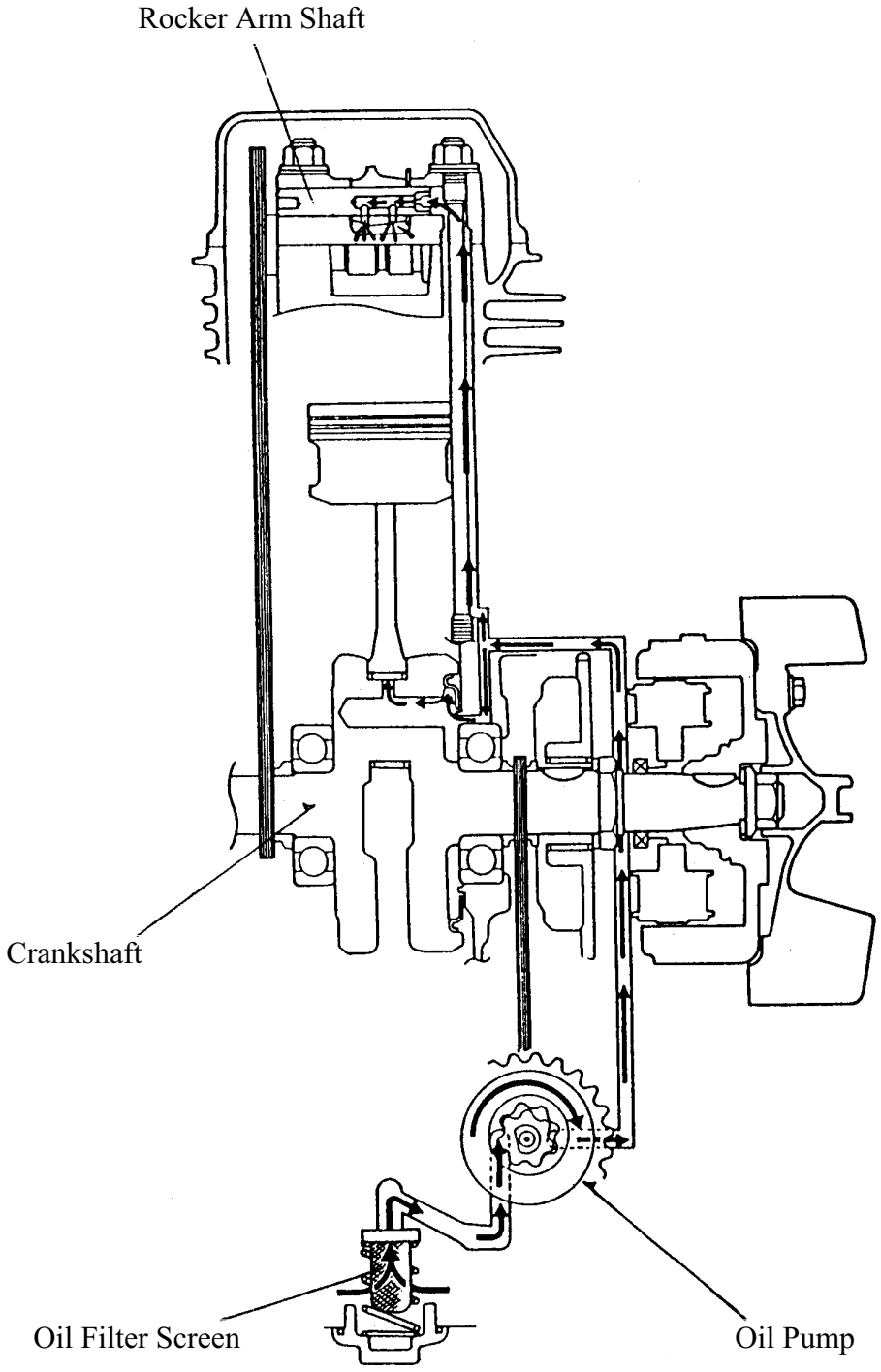
LUBRICATION SYSTEM



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The maintenance of lubrication system can be performed with the engine installed in the frame.
- Use care when removing and installing the oil pump not to allow dust and foreign matters to enter the engine and oil line.
- Do not attempt to disassemble the oil pump. The oil pump must be replaced as a set when it reaches its service limit.
- After the oil pump is installed, check each part for oil leaks.

SPECIFICATIONS

Item		Standard (mm)	Service Limit (mm)
Oil pump	Inner rotor-to-outer rotor clearance	—	0.12
	Outer rotor-to-pump body clearance	—	0.12
	Rotor end-to-pump body clearance	0.05～0.10	0.2

TROUBLESHOOTING

Oil level too low

- Natural oil consumption
- Oil leaks
- Worn or poorly installed piston rings
- Worn valve guide or seal

Poor lubrication pressure

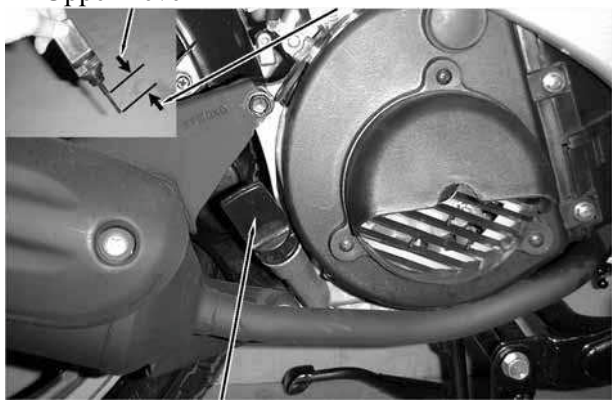
- Oil level too low
- Clogged oil filter or oil passages
- Not use the specified oil

ENGINE OIL/OIL FILTER

OIL LEVEL

* • Place the motorcycle upright on level ground for engine oil level check.
  • Run the engine for 2～3 minutes and check the oil level after the engine is stopped for 2～3 minutes.

Remove the oil dipstick and check the oil level with the oil dipstick.
If the level is near the lower level, fill to the upper level with the specified engine oil.



Oil Dipstick

OIL CHANGE

* The engine oil will drain more easily while the engine is warm.

Remove the oil filter screen cap located on the bottom of the engine to drain the engine oil thoroughly.

Oil Filter Screen Cap

After the oil has been completely drained, check the filter screen O-ring for damage and replace if necessary.
Install the oil filter screen, spring and filter screen cap.
Torque: 1.5kg-m
Fill with the specified SAE15W40#, API: SG/CD engine oil to the proper level.
Oil Capacity: At disassembly : 0.90 liter
At change : 0.75 liter

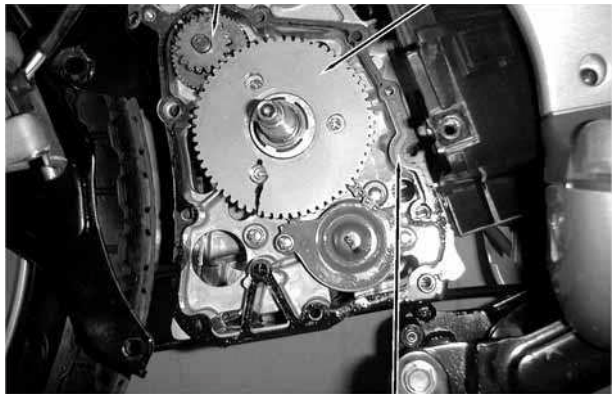
Check for oil leaks and then start the engine and let it idle for few minutes.
Recheck the oil level.

OIL PUMP

REMOVAL

Remove the A.C. generator flywheel. (⇨14-7)
Remove the nine right crankcase cover bolts and the right crankcase cover.

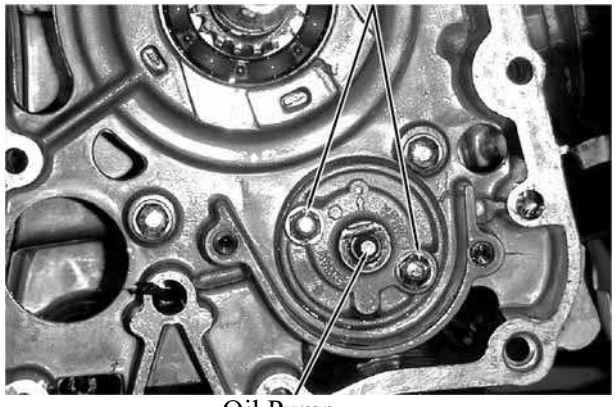
Remove the gasket and dowel pins.
Remove the starter idle gear and starter clutch. (⇨16-7)



Remove the two bolts and oil separator cover.

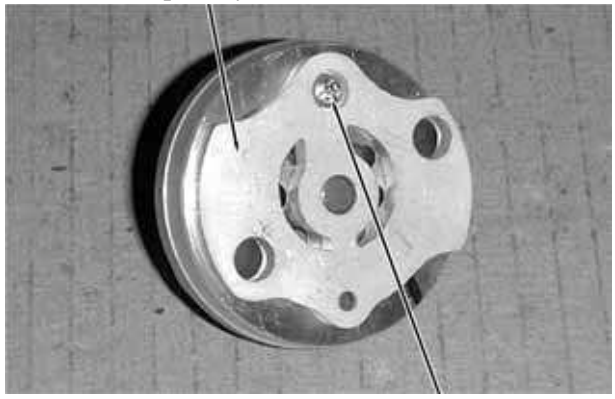
Remove the oil pump driven gear nut to remove the oil pump driven gear and drive chain.

Remove the two oil pump mounting bolts and the oil pump.



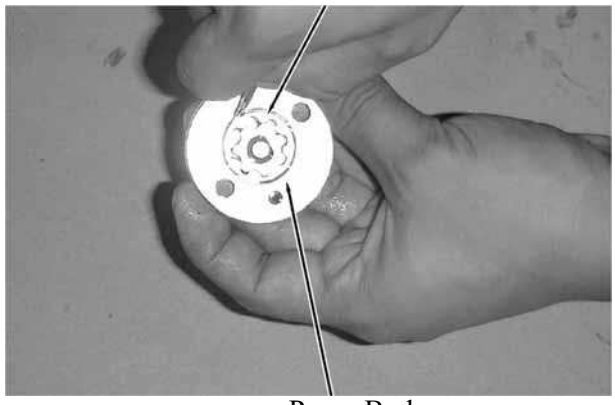
DISASSEMBLY

Remove the screw and disassemble the oil pump.

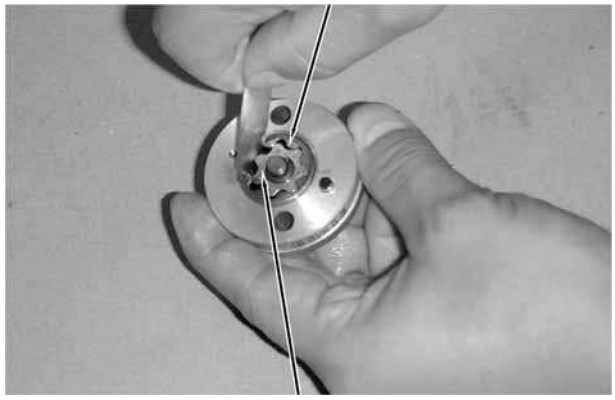


INSPECTION

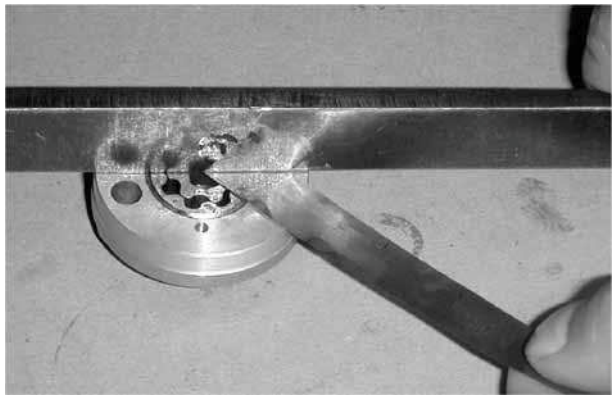
Measure the pump body-to-outer rotor clearance.
Service Limit: 0.12mm



Measure the inner rotor-to-outer rotor clearance.
Service Limit: 0.12mm



Measure the rotor end-to-pump body clearance.
Service Limit: 0.2mm



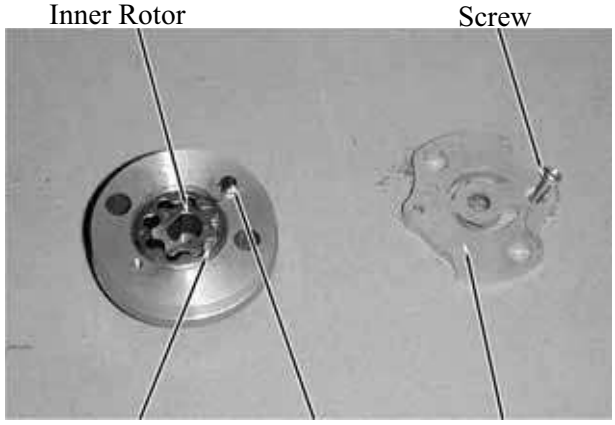
ASSEMBLY

Install the outer rotor, inner rotor and pump shaft into the pump body.

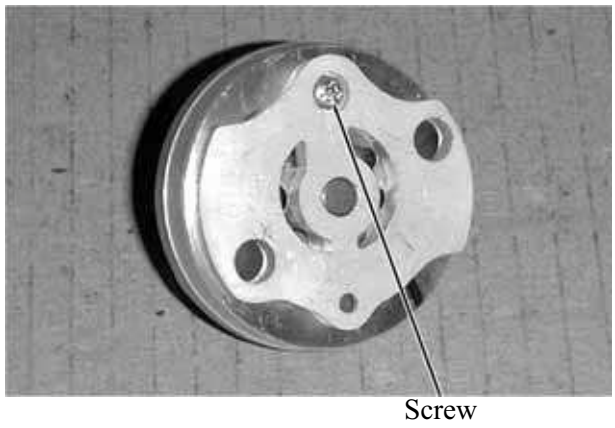
* Insert the pump shaft by aligning the flat on the shaft with the flat in the inner rotor.

Install the dowel pin.

Install the pump cover by aligning the hole in the cover with the dowel pin.



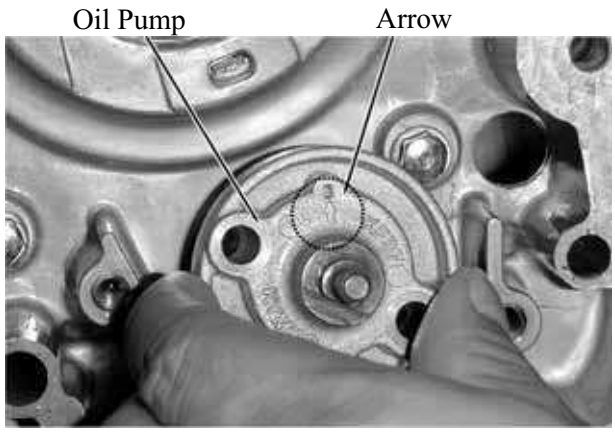
Tighten the screw to secure the pump cover. Make sure that the pump shaft rotates freely without binding.



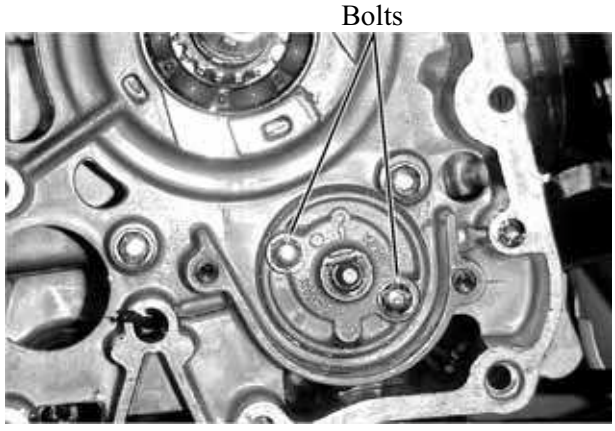
INSTALLATION

Install the oil pump into the crankcase.

* Install the oil pump with the arrow on the pump body facing up and fill the oil pump with engine oil before installation.

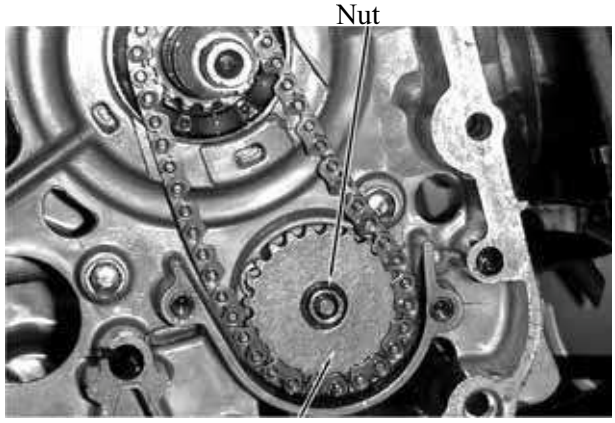


After the oil pump is installed, tighten the two mounting bolts.

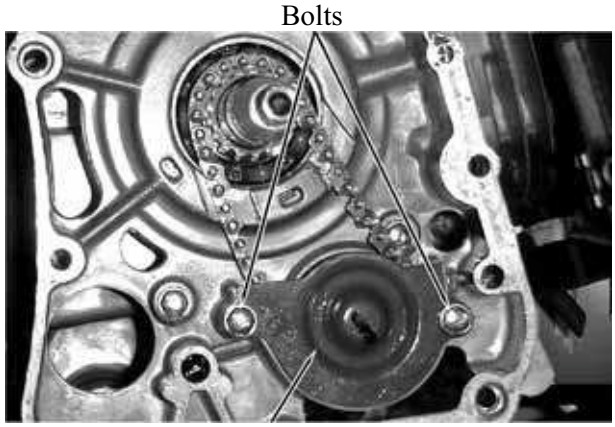


Install the pump driven gear and drive chain by aligning the pump driven gear with the cutout in the pump shaft.
Install and tighten the pump driven gear nut.

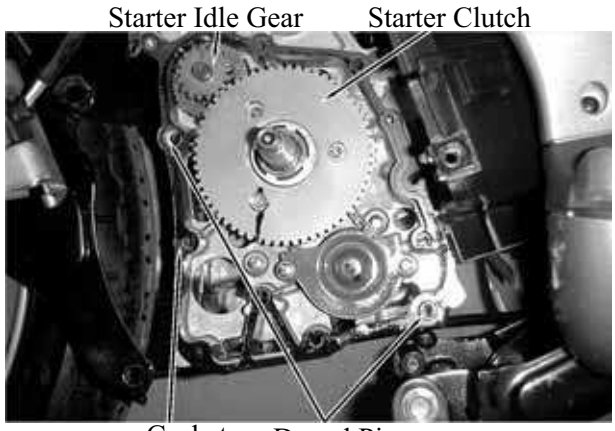
Torque: 1.0kg-m



Install the oil separator cover and tighten the bolts.



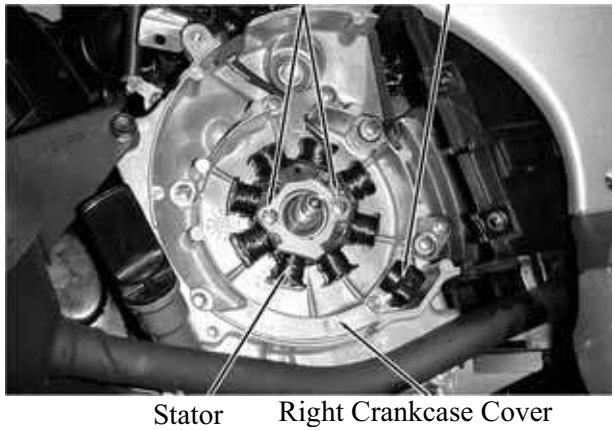
Install the starter idle gear and starter clutch. (⇨16-9)
Install the gasket and dowel pins.



Install the right crankcase cover and tighten the nine bolts.

Torque: 0.9kg-m

* Diagonally tighten the bolts in 2～3 times.



5

FUEL SYSTEM

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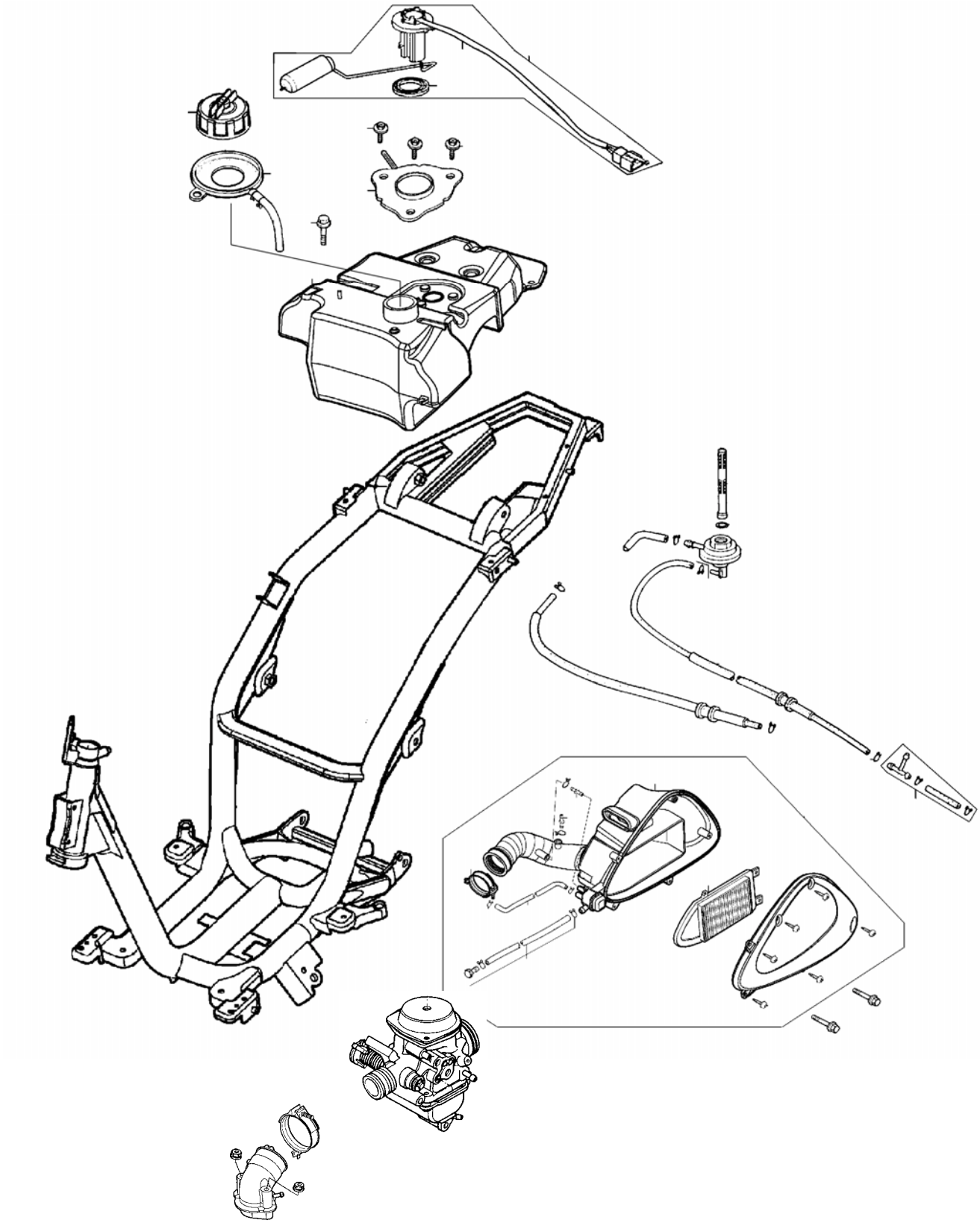
FUEL SYSTEM



SERVICE INFORMATION

GENERAL INSTRUCTIONS

* Gasoline is very dangerous. When working with gasoline, keep sparks and flames away from the working area.
Gasoline is extremely flammable and is explosive under certain conditions. Be sure to work in a well-ventilated area.

- Do not bend or twist control cables. Damaged control cables will not operate smoothly.
- When disassembling fuel system parts, note the locations of O-rings. Replace them with new ones during assembly.
- Before float chamber disassembly, loosen the drain screw to drain the residual gasoline into a clean container.
- After the carburetor is removed, plug the intake manifold side with a clean towel to prevent foreign matters from entering.
- Remove the vacuum diaphragm before cleaning the carburetor air and fuel passages with compressed air to avoid damaging the vacuum diaphragm.
- When the motorcycle is not used for over one month, drain the residual gasoline from the float chamber to avoid erratic idling and clogged slow jet due to deteriorated fuel.
- The pilot screw is factory pre-set and no adjustment is necessary. During carburetor disassembly, note the number of turns of the pilot screw and use as a reference when reinstalling it.
- A tachometer must be used when adjusting the engine speed.
- Turn the pilot screw in or out slowly to obtain the highest engine speed.

SPECIFICATIONS

Item	125 cc	150 cc
	Standard	Standard
Venturi dia. (mm)	22.1	22.1
Identification number	VE052A	VE054A
Float level (mm)	17.5	17.5
Main jet	#108	#110
Slow jet	#35	#35
Idle speed	1700±100rpm	1700±100rpm
Throttle grip free play	2～6mm	2～6mm
Pilot screw opening	$3\ 3/8$	$2\ 1/2$

SPECIAL TOOL

Float level gauge

TROUBLESHOOTING

Engine is hard to start
- No spark at plug
- Compression too low
- No fuel to carburetor
  - –Clogged fuel filter
  - –Restricted fuel line
  - –Faulty float valve
  - –Incorrectly adjusted float level
- Engine flooded with fuel
  - –Clogged air cleaner
  - –Fuel overflowing
- Intake air leak
- Contaminated fuel
- Faulty auto bystarter
- Clogged idle system or auto bystarter passages

Rich mixture
- Faulty auto bystarter
- Faulty float valve
- Float level too high
- Clogged air jets
- Dirty air cleaner
- Flooded carburetor

Backfiring at deceleration
- Faulty air cut-off valve
- Lean mixture in idle system

Misfiring during acceleration
- Faulty ignition system
- Lean mixture

Engine idles roughly, stalls or runs poorly
- Clogged fuel system
- Ignition malfunction
- Rich or lean mixture
- Contaminated fuel
- Intake air leak
- Incorrect idle speed
- Incorrectly adjusted pilot screw
- Clogged idle system or auto bystarter passages
- Incorrectly adjusted float level

Lean mixture
- Clogged fuel jets
- Faulty float valve
- Float level too low
- Clogged fuel system
- Intake air leak
- Faulty vacuum piston
- Faulty throttle

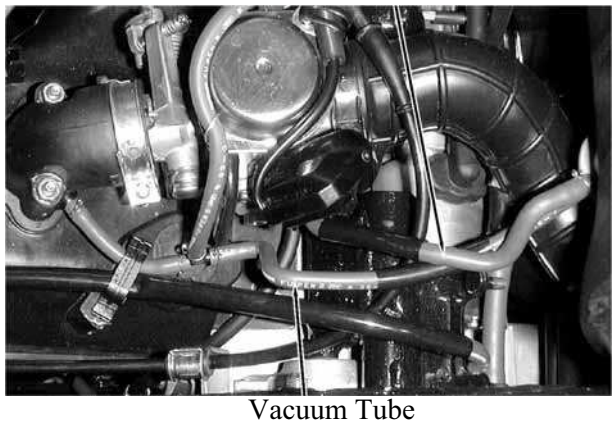
CARBURETOR REMOVAL

Remove the frame body cover. (⇨2)
Disconnect the auto bystarter wire connector.

Auto Bystarter Wire

Loosen the drain screw and drain the fuel from the float chamber.
Disconnect the fuel tube and vacuum tube at the carburetor.

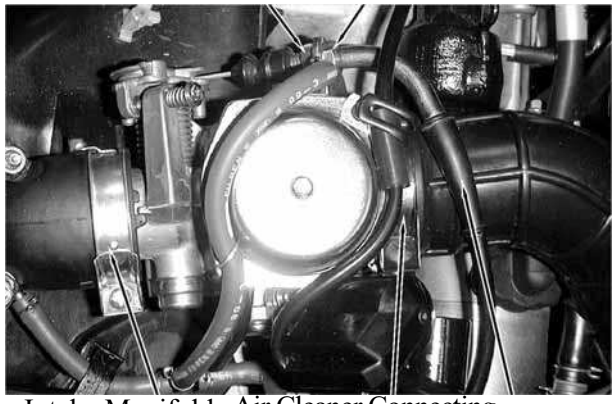
Fuel Tube



Vacuum Tube

Loosen the throttle cable adjusting nut and lock nut, and disconnect the throttle cable from the carburetor.
Loosen the carburetor intake manifold band and air cleaner connecting tube band screws and then remove the carburetor.

Lock Nut Adjusting Nut



Intake Manifold Band
Air Cleaner Connecting Tube Band
Throttle Cable

AUTO BYSTARTER

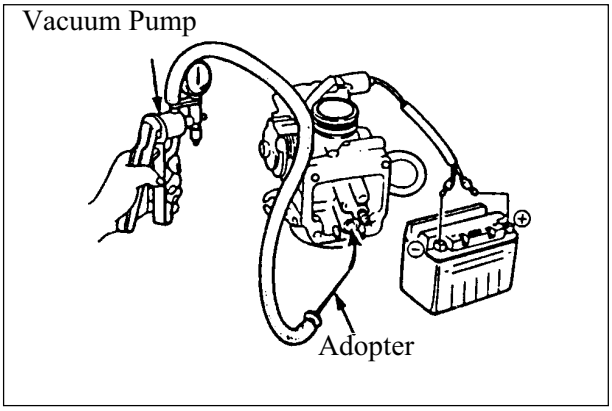
OPERATION INSPECTION

Measure the resistance between the auto bystarter wire terminals.

Resistance: 5Ω max. (10 minutes minimum after stopping the engine)

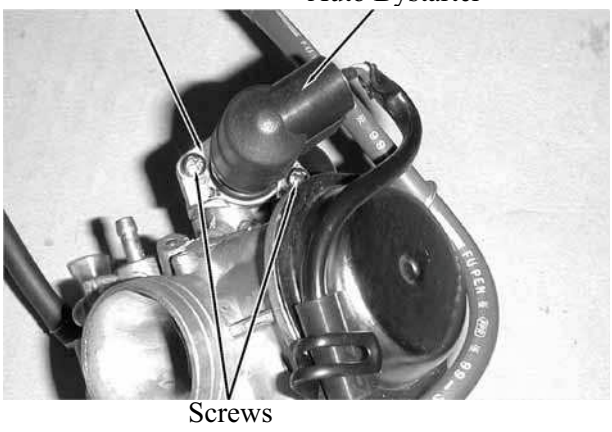
If the reading is not within the limit, replace the auto bystarter with a new one.

Connect a hose to the fuel enriching circuit of the carburetor. Connect the auto bystarter yellow wire to the positive (+) terminal of a battery and green wire to the negative (-) terminal. Wait 5 minutes and blow the hose with mouth or vacuum pump. If the passage is blocked, the auto bystarter is normal.
Disconnect the auto bystarter from the battery. Wait 30 minutes and blow the hose with mouth or vacuum pump. If air can be blown into the hose, the auto bystarter is normal.



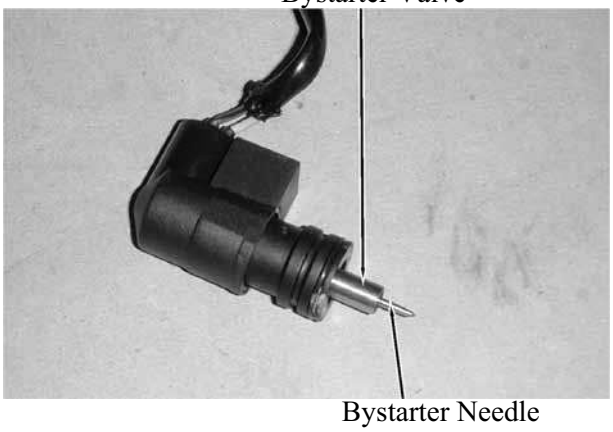
REMOVAL

Remove the set plate screws and set plate.
Remove the auto bystarter from the carburetor.



AUTO BYSTARTER INSPECTION

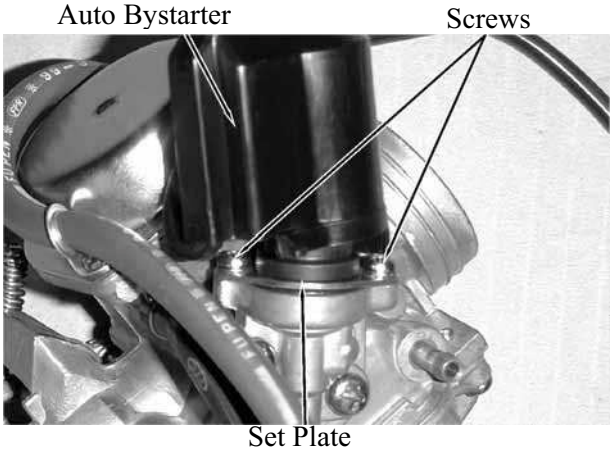
Check the auto bystarter valve and needle for nicks, wear or damage.
If any faulty part is found, replace the auto bystarter as a set.



INSTALLATION

Insert the auto bystarter into the carburetor body until it bottoms.
Position the set plate into the groove in the auto bystarter and tighten the screws.

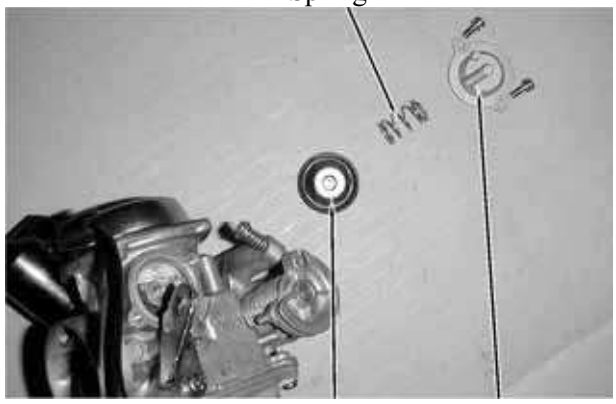
* • Be sure to install the auto bystarter and set plate properly.
• Install the set plate with its bottom face facing down.



AIR CUT-OFF VALVE

DISASSEMBLY

Disconnect the vacuum tube from the air cut-off valve.
Remove the two screws to remove the air cut-off valve cover, spring and vacuum diaphragm.



ASSEMBLY

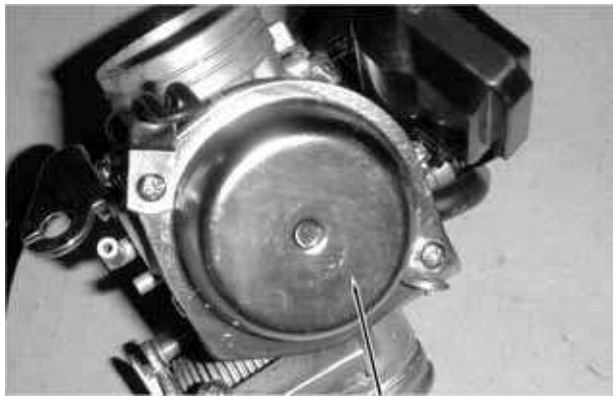
Install the vacuum diaphragm onto the carburetor.
Install the spring and air cut-off valve cover and then tighten the two screws.

*
- Be sure to set the vacuum diaphragm lip into the groove on the carburetor.
- When installing the air cut-off valve cover, make sure that the vacuum diaphragm is properly installed.

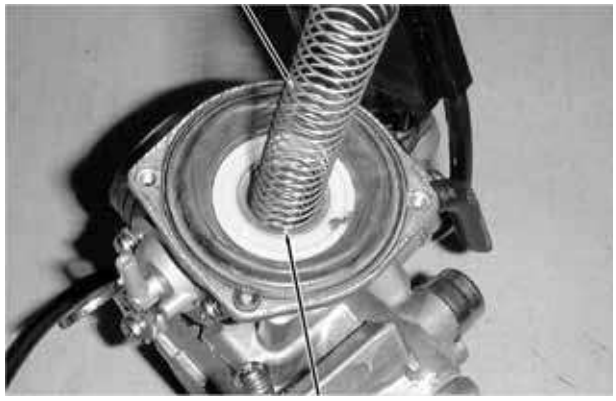
VACUUM CHAMBER

DISASSEMBLY

Remove the two vacuum chamber cover screws and the cover.

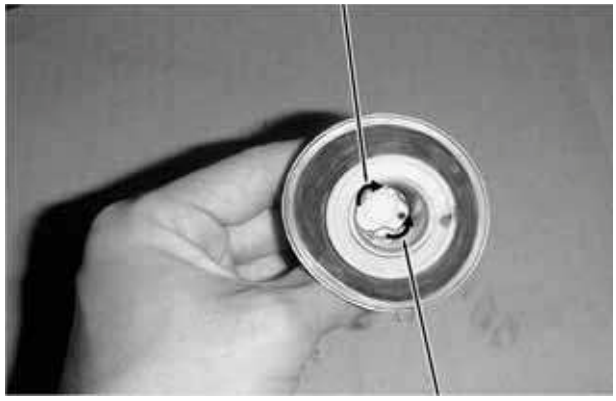


Remove the spring and vacuum diaphragm/ piston.



Push the needle holder in and turn it left to remove the needle holder.
Remove the spring and jet needle from the piston.

* Be careful not to damage the vacuum diaphragm.



INSPECTION

Inspect the needle for stepped wear.
Inspect the vacuum piston for wear or damage.
Inspect the diaphragm for deterioration and tears.

ASSEMBLY

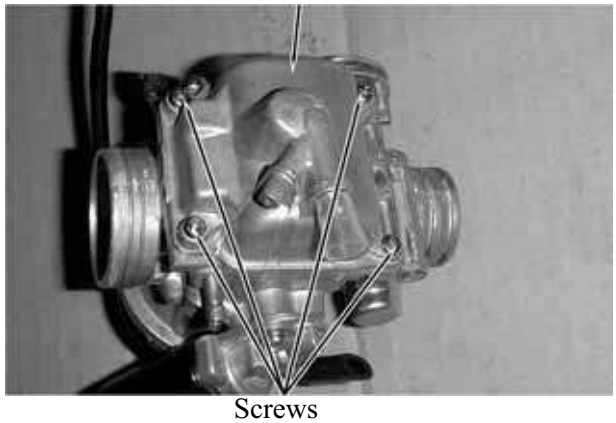
Install the vacuum piston/diaphragm in the carburetor body and align the tab on the diaphragm with the groove in the carburetor body.
Install the spring.
Install the vacuum chamber cover and tighten it with the two screws.

* • Be careful not to damage the diaphragm.
  • Hold the vacuum piston while tightening the vacuum chamber cover.

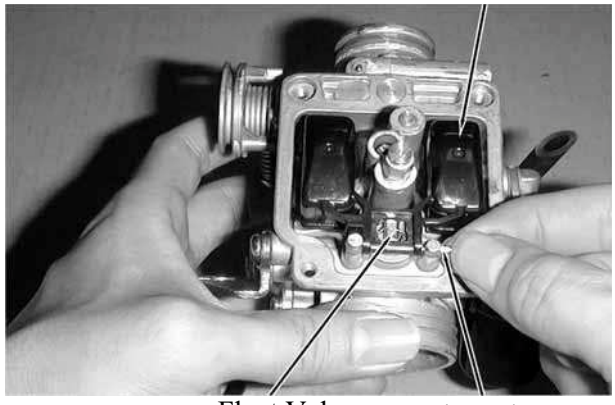
FLOAT CHAMBER

DISASSEMBLY

Remove the four float chamber screws and the float chamber.



Remove the float pin, float and float valve.



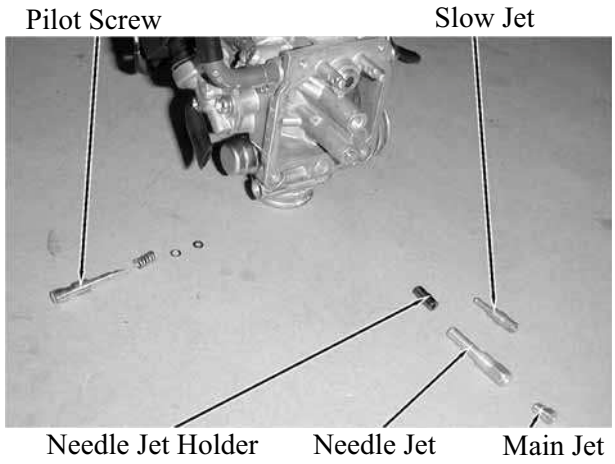
INSPECTION

Inspect the float valve and valve seat for damage or clogging.
Inspect the float valve and valve seat contact area for stepped wear or contamination.

* Worn or contaminated float valve and valve seat must be replaced because it will result in float level too high due to incomplete airtightness.

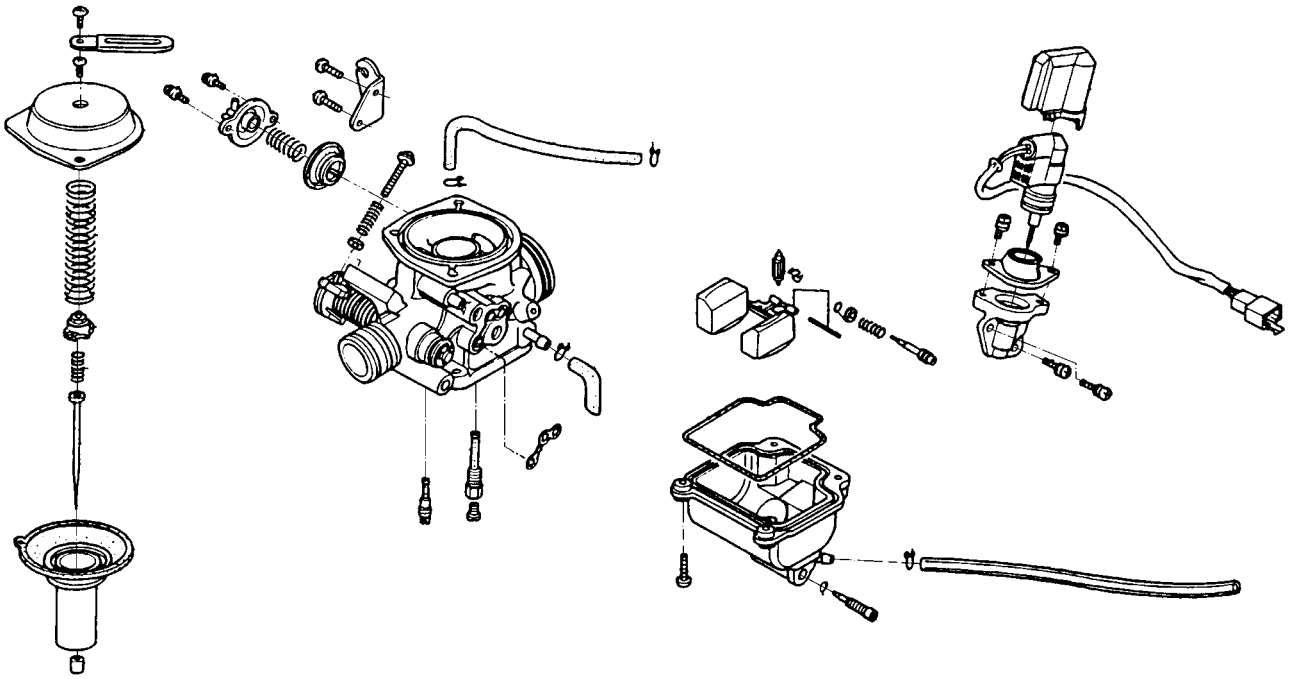
Remove the main jet, needle jet holder, needle jet, slow jet and pilot screw.

* • Be careful not to damage the fuel jets and pilot screw.
  • Before removing, turn the pilot screw in and carefully count the number of turns until it seats lightly and then make a note of this.
  • Do not force the pilot screw against its seat to avoid seat damage.



Clean the removed fuel jets with detergent oil and blow them open with compressed air.
Blow compressed air through all passages of the carburetor body.

* Also remove and clean the vacuum chamber and air cut-off valve.

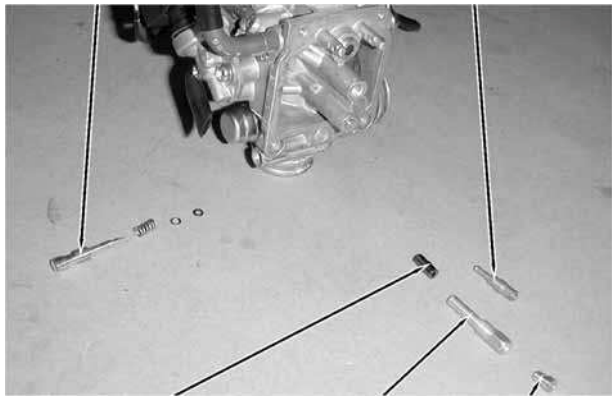


ASSEMBLY

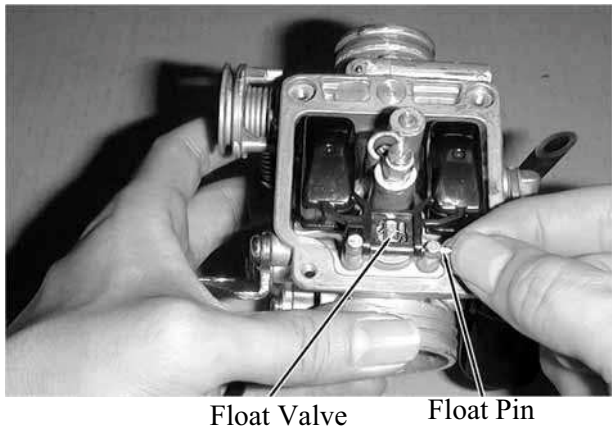
Install the slow jet, needle jet, needle jet holder, main jet and pilot screw.

* Return the pilot screw to the original position as noted during removal.

Standard Opening: 3 3/8 turns



Install the float valve, float and float pin.



FLOAT LEVEL INSPECTION

* • Check the operation of the float valve and float before float level inspection.
  • Measure the float level by placing the float level gauge on the float chamber face parallel with the main jet.

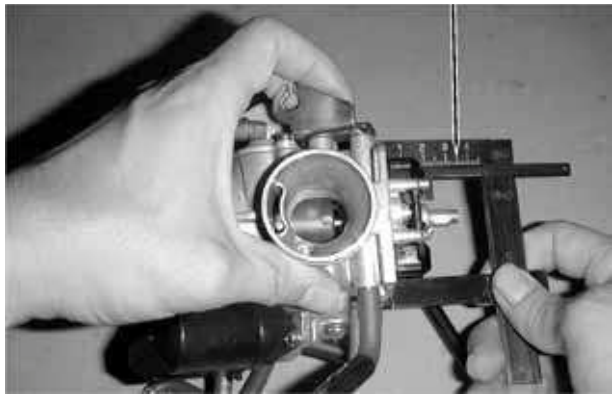
Measure the float level.

Float Level: 18.5mm

Special

Float Level Gauge

Float Level Gauge



CARBURETOR INSTALLATION

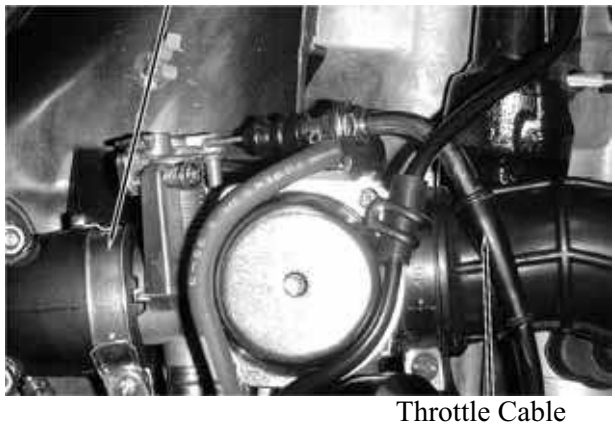
Tighten the drain screw.

Install the carburetor onto the intake manifold, aligning the tab on the carburetor with the cutout in the intake manifold. Tighten the band screw.

Install the air cleaner connecting tube and tighten the band screw.

Connect the throttle cable to the throttle wheel on the carburetor.

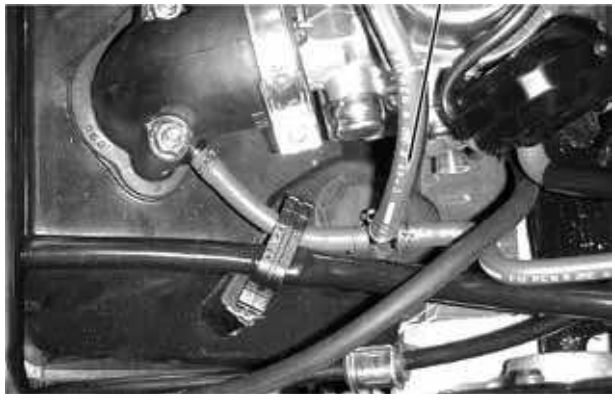
Connecting Tube Band



Throttle Cable

Connect the fuel tube and vacuum tube to the carburetor.

Vacuum Tube



Connect the auto bystarter wire connector.

Perform the following inspections and adjustments:

-Throttle grip free play (⇨3-3)

-Carburetor idle speed (⇨3-6)

Auto Bystarter Wire Connector

FUEL TANK

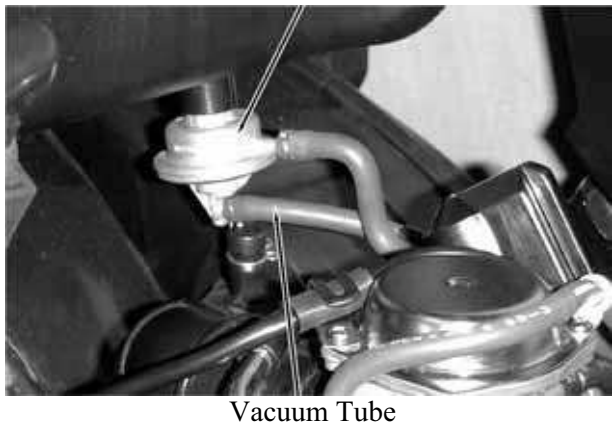
REMOVAL

Remove the frame body cover.
Disconnect the fuel unit wire connector.

Fuel Unit Wire Connector

Disconnect the fuel tube and vacuum tube at the auto fuel valve.

Auto Fuel Valve

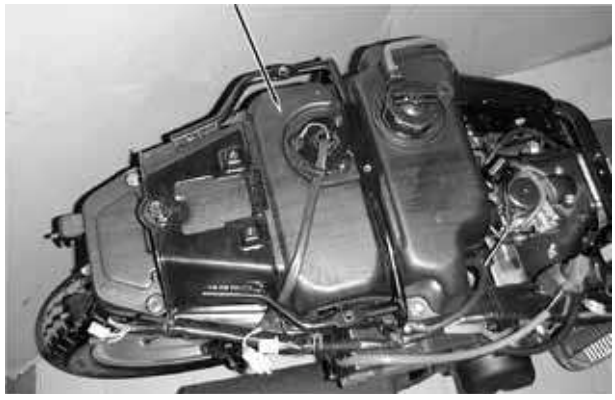


Vacuum Tube

Remove the fuel tank frame mounting bolts and fuel tank frame.

Remove the four fuel tank mounting bolts and fuel tank.

Fuel Tank



INSTALLATION

Install the fuel tank in the reverse order of removal.

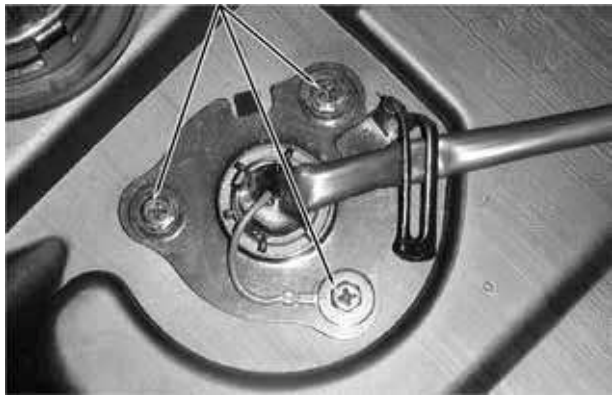
FUEL UNIT

* Refer to Section 17 for the fuel unit inspection.

REMOVAL

Disconnect the fuel unit wire connector.
Removal the three bolts on the fuel unit.

Bolt



* Do not bend the fuel unit float arm; otherwise, the fuel unit metering values will be incorrect.

Install the fuel unit.

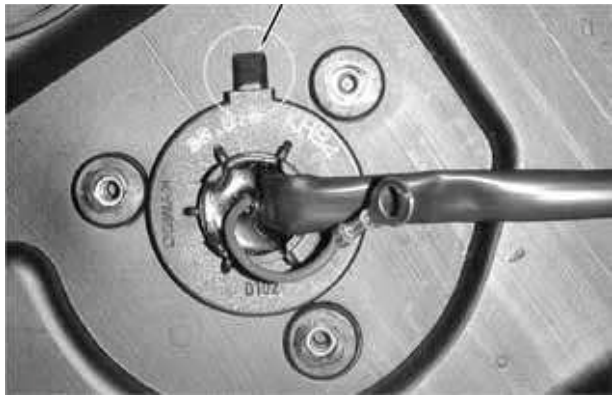
* Make sure that the nick on the retainer is aligned with the nick on the fuel tank.

Connect the fuel unit wire connector.

INSTALLATION

Inspect the fuel unit gasket for damage.

Nick



AUTO FUEL VALVE

* **No Smoking!**

* First clean the fuel tube.

Disconnect the fuel tube and vacuum tube from the carburetor.

Connect a vacuum pump to the vacuum tube and apply vacuum. Check if fuel flows out.

- The valve is operating normally if fuel flows out of the fuel tube when the vacuum is applied.
- The fuel shall stop flowing out when the vacuum pump is disconnected.

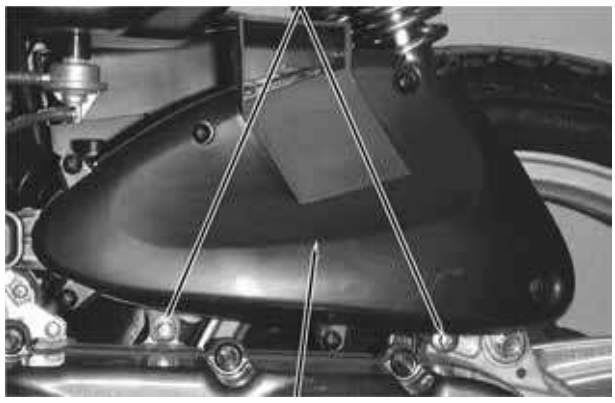
  If the fuel valve does not operate normally, Check the vacuum diaphragm for poor installation or damage and inspect the fuel tube for clogging.

Auto Fuel Valve

AIR CLEANER

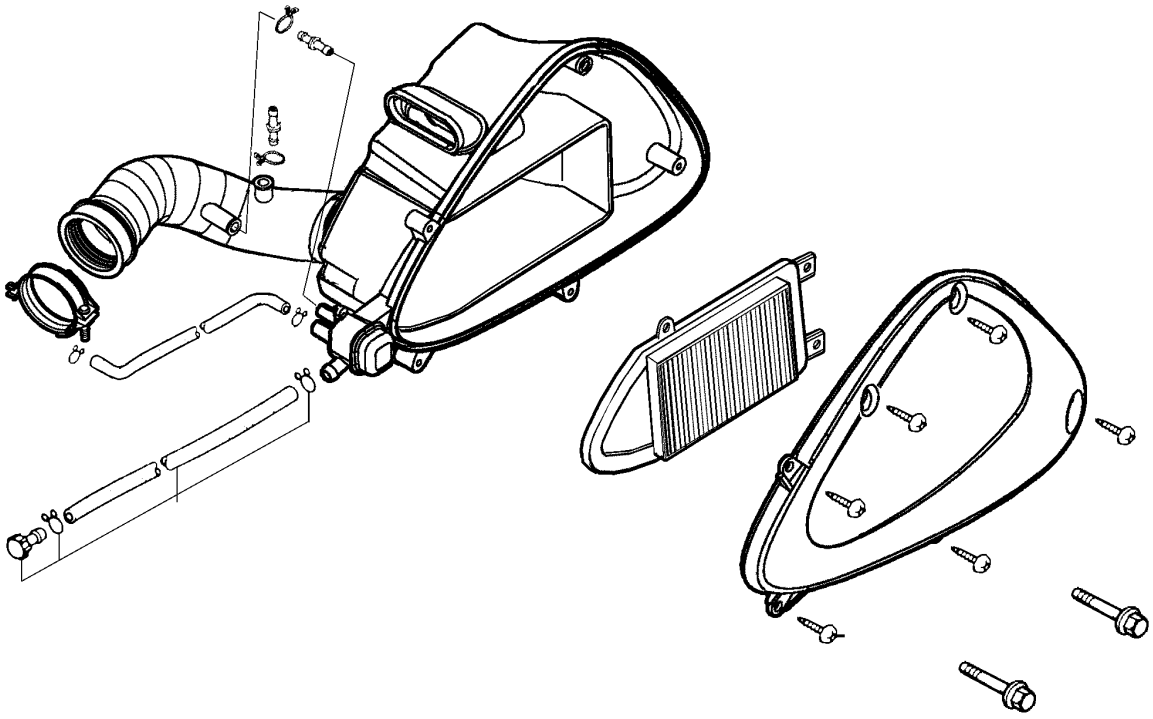
Loosen the air cleaner connecting tube band screw.
Disconnect the transmission case breather tube from the air cleaner case.
Remove the two bolts and air cleaner case.

Bolt



Air Cleaner Case

The installation sequence is the reverse of removal.



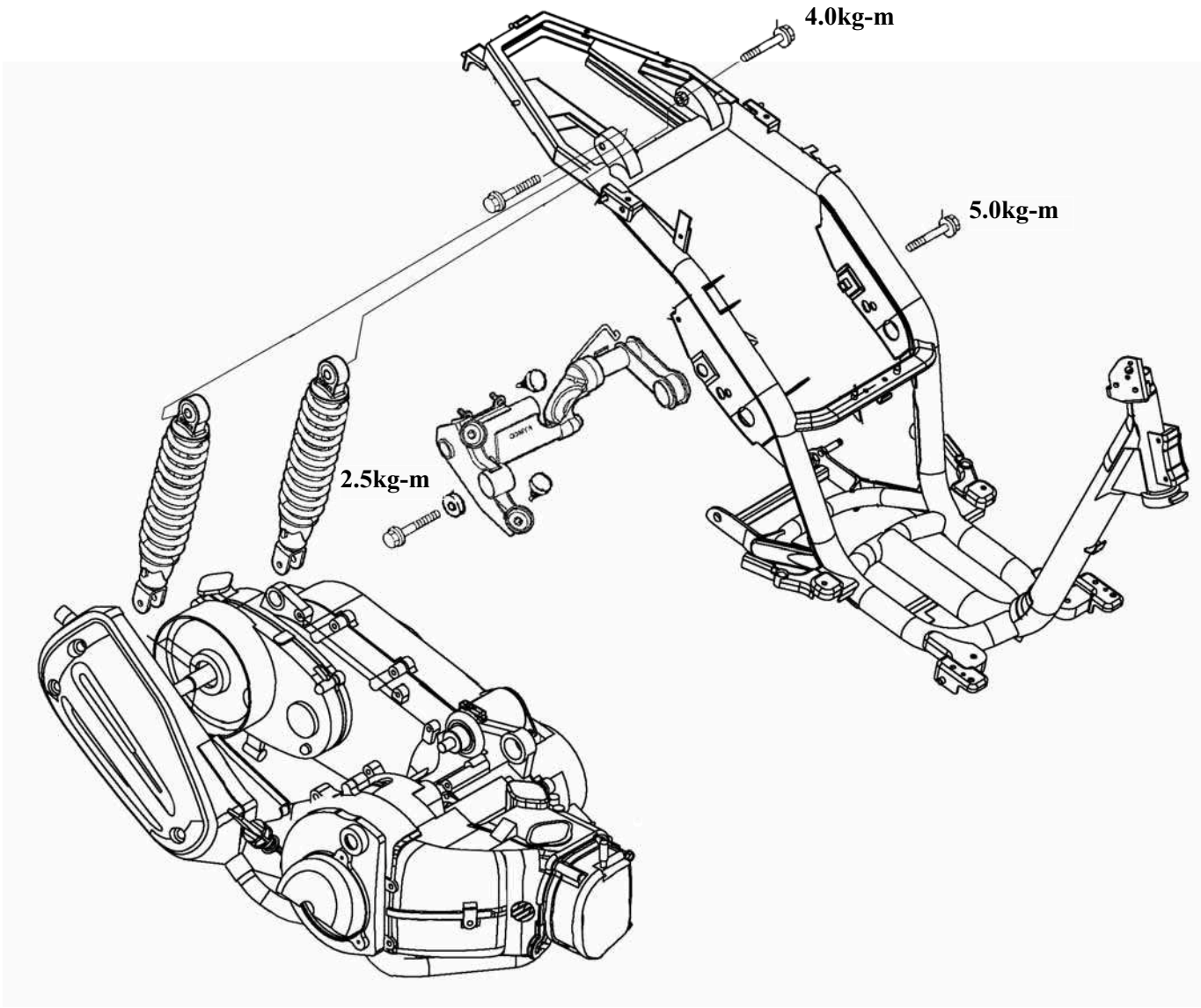
6

ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION 6-2

ENGINE REMOVAL 6-3

ENGINE INSTALLATION 6-5


4.0kg-m
5.0kg-m
2.5kg-m

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The engine removal operation is required to support the engine. Be careful not to damage the motorcycle body, cables and wires during engine removal.
- Use shop towels to protect the motorcycle body during engine removal.
- Parts requiring engine removal for servicing:
  — Crankcase
  — Crankshaft

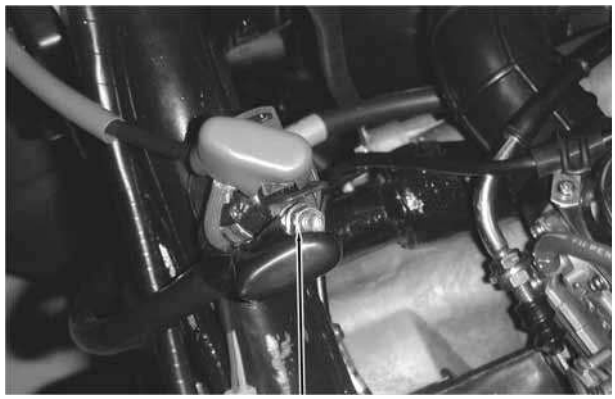
ENGINE REMOVAL

Disconnect the battery negative cable.
Remove the frame body cover. (⇨2)
Disconnect the engine negative cable.
Disconnect the spark plug high tension wire.
Disconnect the auto bystarter wire connector.
Disconnect the A.C.G. wire connector.

Auto Bystarter Wire Connector

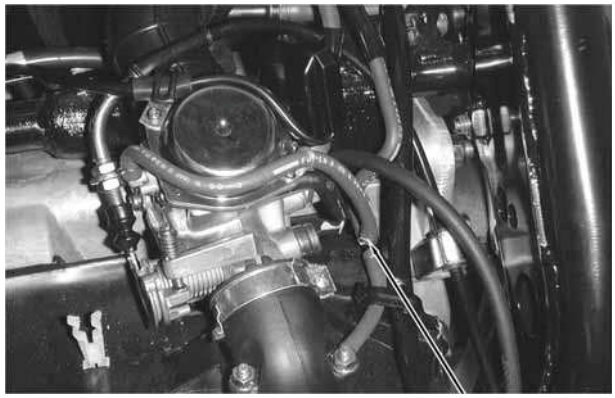
A.C.G. Wire Connector

Disconnect the starter motor cable from the starter relay.
Remove the spark plug cap.



Starter Relay

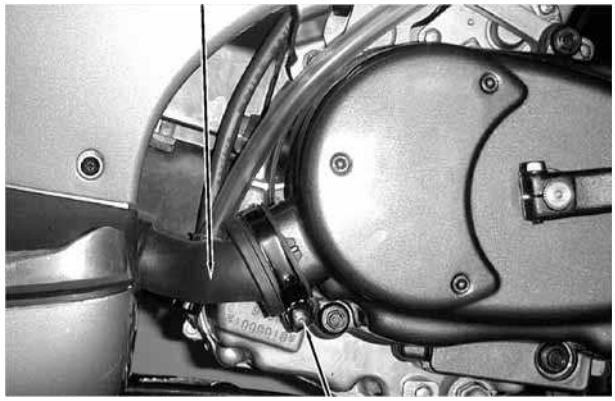
Disconnect the fuel tube at the carburetor side.
Disconnect the auto fuel valve vacuum tube from the tee tube.
Disconnect the throttle cable from the carburetor.



Tee Tube

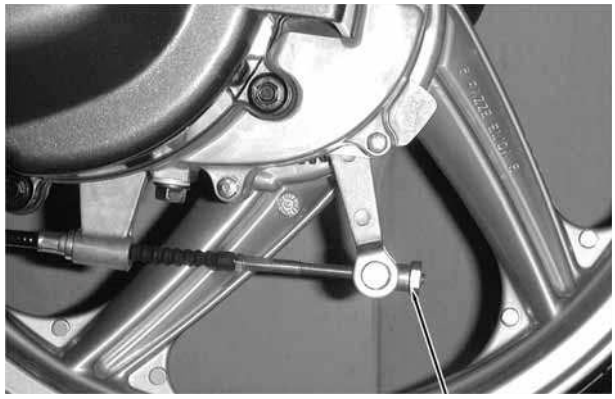
Connecting Tube

Loosen the drive belt air cleaner connecting tube band screw and remove the connecting tube.



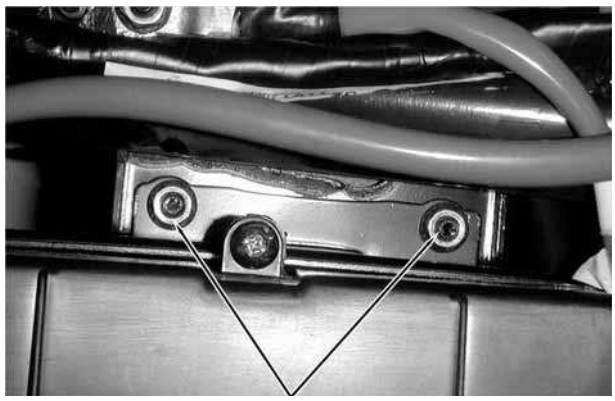
Screw

Remove the air cleaner bolts.
Remove the rear brake adjusting nut, connecting pin and rear brake cable.



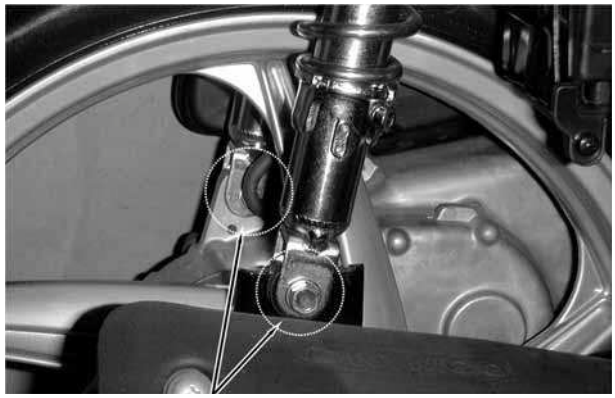
Rear brake adjusting nut

Remove the two nut on the battery tank.



Nut

Remove the rear shock absorbers mounting bolts.



Rear Shock Absorber Bolt

Bolt

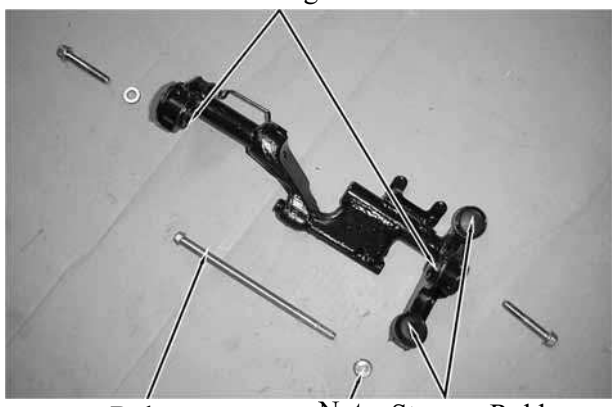
Remove the four A.C. generator cooling fan cover bolts and cooling fan cover.
Remove the engine mounting bolt and pull out the engine with the engine hanger bracket backward.

ENGINE HANGER BRACKET REMOVAL

Remove the ignition coil from the engine hanger.
Remove the engine hanger bracket bolt and nut.

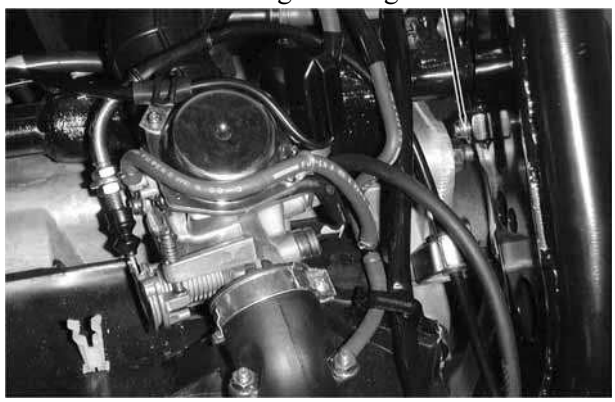
Engine Hanger Bracket

Remove the engine hanger bracket.
Inspect the engine hanger bushings and stopper rubbers for wear or damage.



ENGINE HANGER BRACKET INSTALLATION

Install the engine hanger bracket to the engine.
Install the engine hanger bracket bolt and tighten the nut.


Engine Hanger Bracket Bolt

ENGINE INSTALLATION

Install the engine and tighten the engine mounting bolts.

Torque: 5.0kg-m

Tighten the rear shock absorbers mounting bolts.

Torque: Up side 4.0kg-m
Down side 2.5kg-m

Install the removed parts in the reverse order of removal.

- Route the wires and cables properly.

After installation, inspect and adjust the following:

- Throttle grip free play (⇨3-3)
- Rear brake adjustment (⇨3-8)

7

CYLINDER HEAD/VALVES

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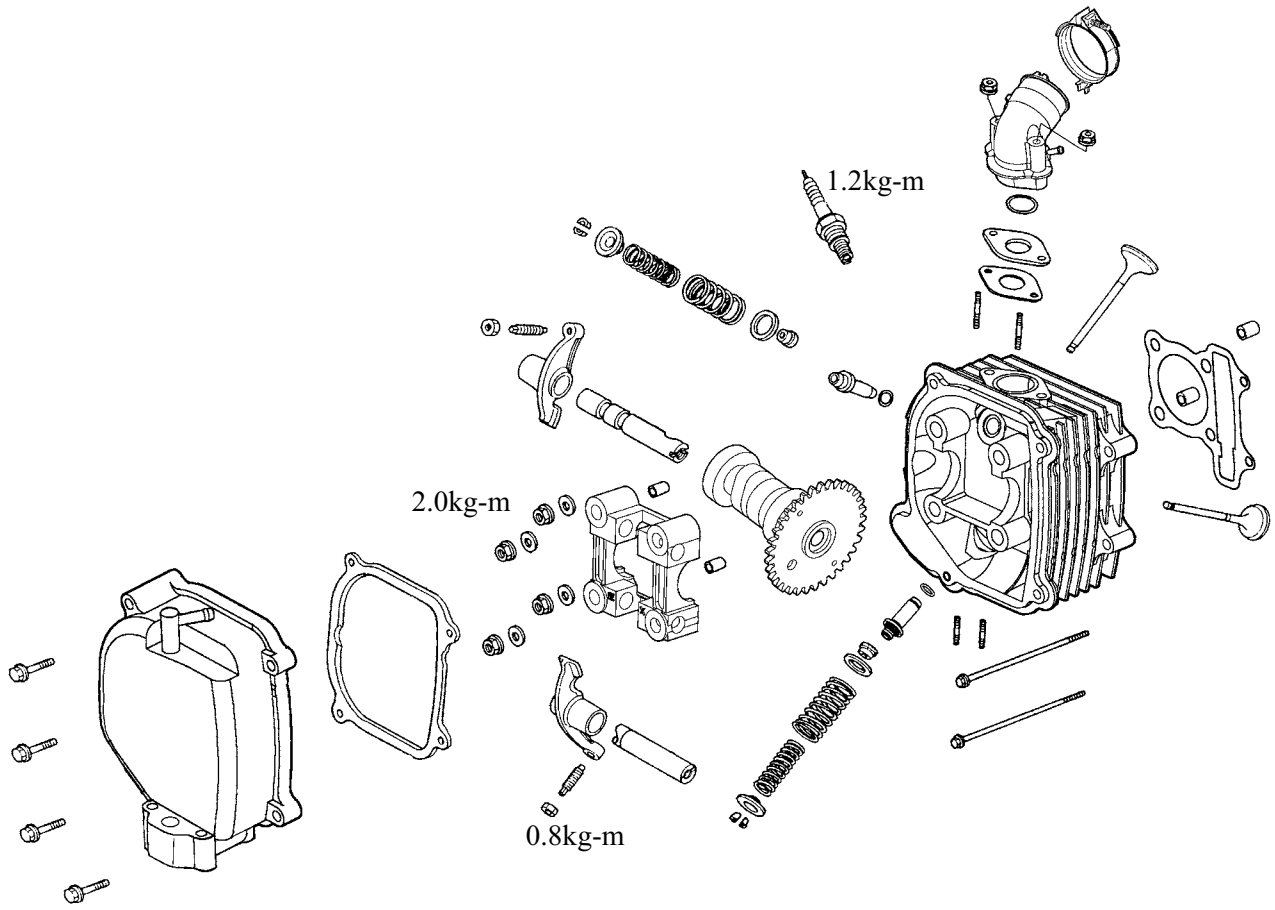
CYLINDER HEAD REMOVAL 7-7

CYLINDER HEAD DISASSEMBLY 7-8

CYLINDER HEAD ASSEMBLY 7-10

CYLINDER HEAD INSTALLATION 7-10

CAMSHAFT INSTALLATION 7-11


1.2kg-m
2.0kg-m
0.8kg-m

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The cylinder head can be serviced with the engine installed in the frame.
- When assembling, apply molybdenum disulfide grease or engine oil to the valve guide movable parts, valve arm and camshaft sliding surface for initial lubrication.
- The camshaft is lubricated by engine oil through the cylinder head engine oil passages. Clean the oil passages before assembling the cylinder head.
- After disassembly, clean the removed parts and dry them with compressed air before inspection.
- After removal, mark and arrange the removed parts in order. When assembling, install them in the reverse order of removal.

SPECIFICATIONS

Item		Standard (mm)		Service Limit (mm)	
		125cc	150cc	125cc	150cc
Valve clearance (cold)	IN	0.10	0.10	—	—
	EX	0.10	0.10	—	—
Cylinder head compression pressure		13 (kg/cm²)	15 (kg/cm²)	—	—
Cylinder head warpage		—	—	—	—
Camshaft cam height	IN	29.7064	29.803	29.3	29.4
	EX	29.4251	29.4388	29.15	29.05
Valve rocker arm I.D.	IN	10.000-10.015		10.10	
	EX	10.00-10.015		10.10	
Valve rocker arm shaft O.D.	IN	9.972-9.987		9.91	
	EX	9.972-9.987		9.91	
Valve seat width	IN	1.0		1.8	
	EX	1.0		1.8	
Valve stem O.D.	IN	4.975-4.990		4.90	
	EX	4.975-4.990		4.90	
Valve guide I.D.	IN	5.000-5.012		5.30	
	EX	5.000-5.012		5.30	
Valve stem-to-guide clearance	IN	0.10-0.037		0.08	
	EX	0.030-0.057		0.10	

TORQUE VALUES

Cylinder head nut	2.0kg-m	Apply engine oil to threads
Valve clearance adjusting nut	0.8kg-m	Apply engine oil to threads

TROUBLESHOOTING

- The poor cylinder head operation can be diagnosed by a compression test or by tracing engine top-end noises.

Poor performance at idle speed

- Compression too low

Compression too low

- Incorrect valve clearance adjustment
- Burned or bend valves
- Incorrect valve timing
- Broken valve spring
- Poor valve and valve seat contact
- Leaking cylinder head gasket
- Warped or cracked cylinder head contact surface
- Poorly installed spark plug

Compression too high

- Excessive carbon build-up in combustion chamber

White smoke from exhaust muffler

- Worn valve stem or valve guide
- Damaged valve stem seal

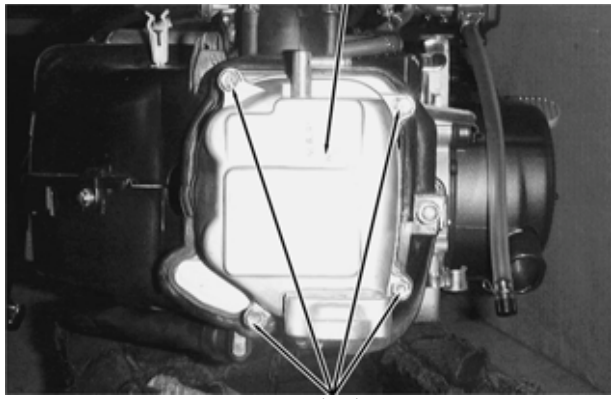
Abnormal noise

- Incorrect valve clearance adjustment
- Sticking valve or broken valve spring
- Damaged or worn camshaft
- Worn cam chain guide
- Worn camshaft and rocker arm

CAMSHAFT REMOVAL

Remove the center cover.
Remove the four cylinder head cover bolts to remove the cylinder head cover.

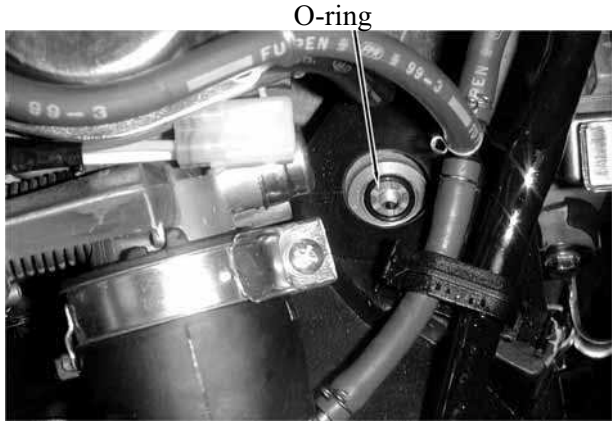
Cylinder Head Cover



bolt

Remove the cam chain tensioner cap screw and the O-ring.

O-ring

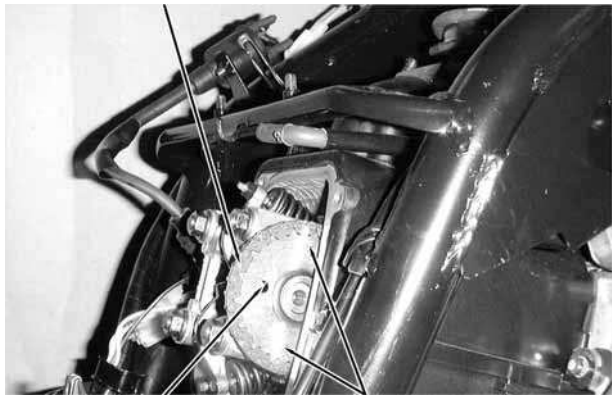


Turn the cam chain tensioner screw clockwise to tighten it.

Tensioner Screw

Turn the flywheel counterclockwise so that the “T” mark on the flywheel aligns with the index mark on the crankcase to bring the round hole on the camshaft gear facing up to the top dead center on the compression stroke.

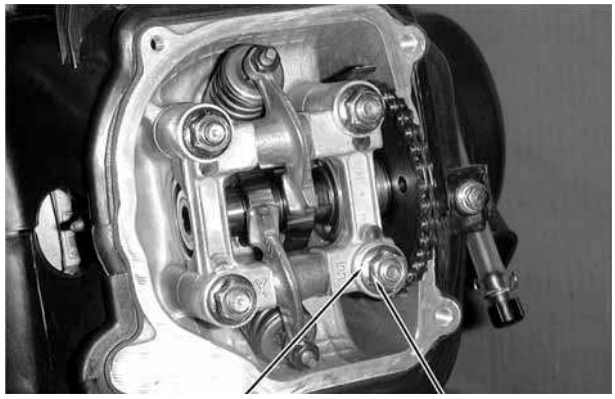
Camshaft Gear



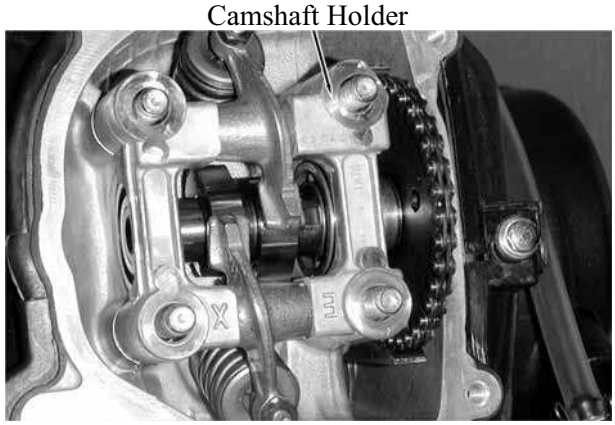
Round Hole Punch Marks

Remove the four cylinder head nuts and washers.

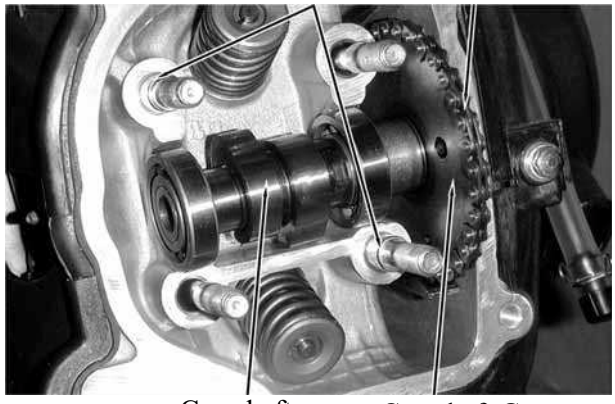
* Diagonally loosen the cylinder head nuts in 2 or 3 times.



Remove the camshaft holder and dowel pins.



Remove the camshaft gear from the cam chain and remove the camshaft.

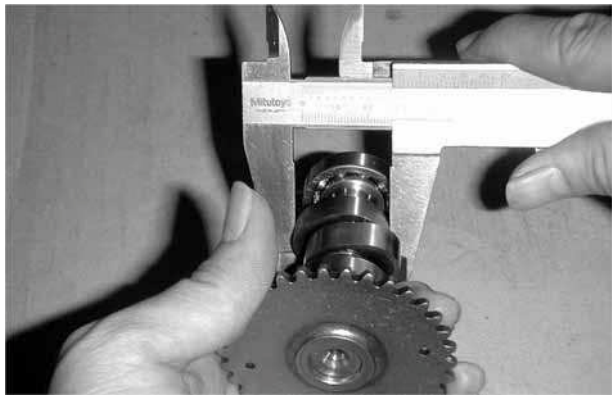


CAMSHAFT INSPECTION

Check each cam lobe for wear or damage.
Measure the cam lobe height.

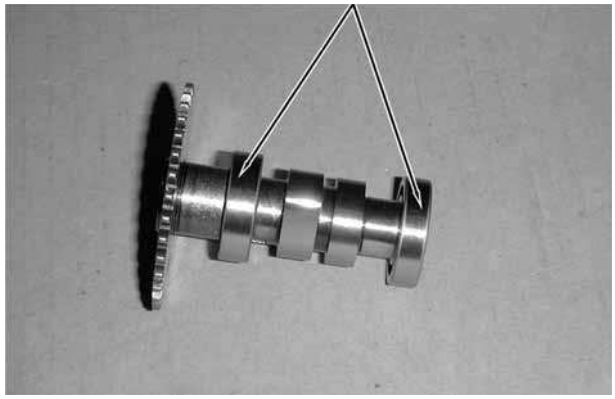
Service Limits:

(125 cc)
IN : 29.30mm replace if below
EX: 29.15mm replace if below
(150 cc)
IN : 29.40mm replace if below
EX: 29.05mm replace if below



Check each camshaft bearing for play or damage. Replace the camshaft assembly with a new one if the bearings are noisy or have excessive wear.

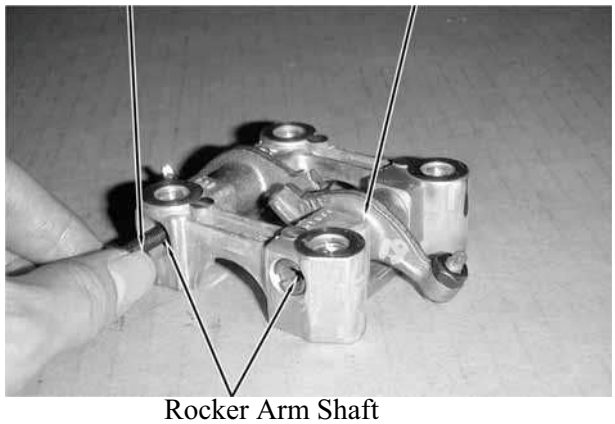
Camshaft Bearings



CAMSHAFT HOLDER DISASSEMBLY

Take out the valve rocker arm shafts using a 5mm bolt.
Remove the valve rocker arms.

5mm Bolt Rocker Arm



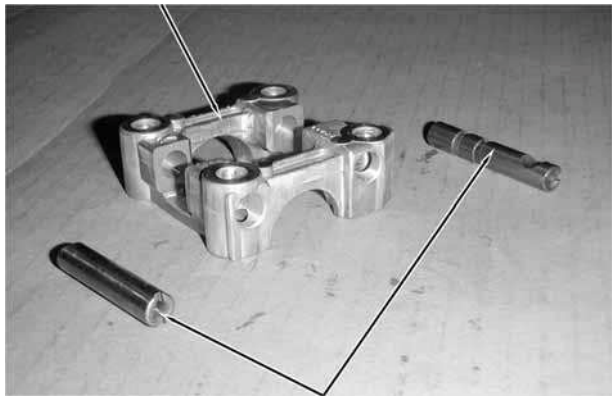
Rocker Arm Shaft

CAMSHAFT HOLDER INSPECTION

Inspect the camshaft holder, valve rocker arms and rocker arm shafts for wear or damage.

* If the valve rocker arm contact surface is worn, check each cam lobe for wear or damage.

Camshaft Holder



Rocker Arm Shafts

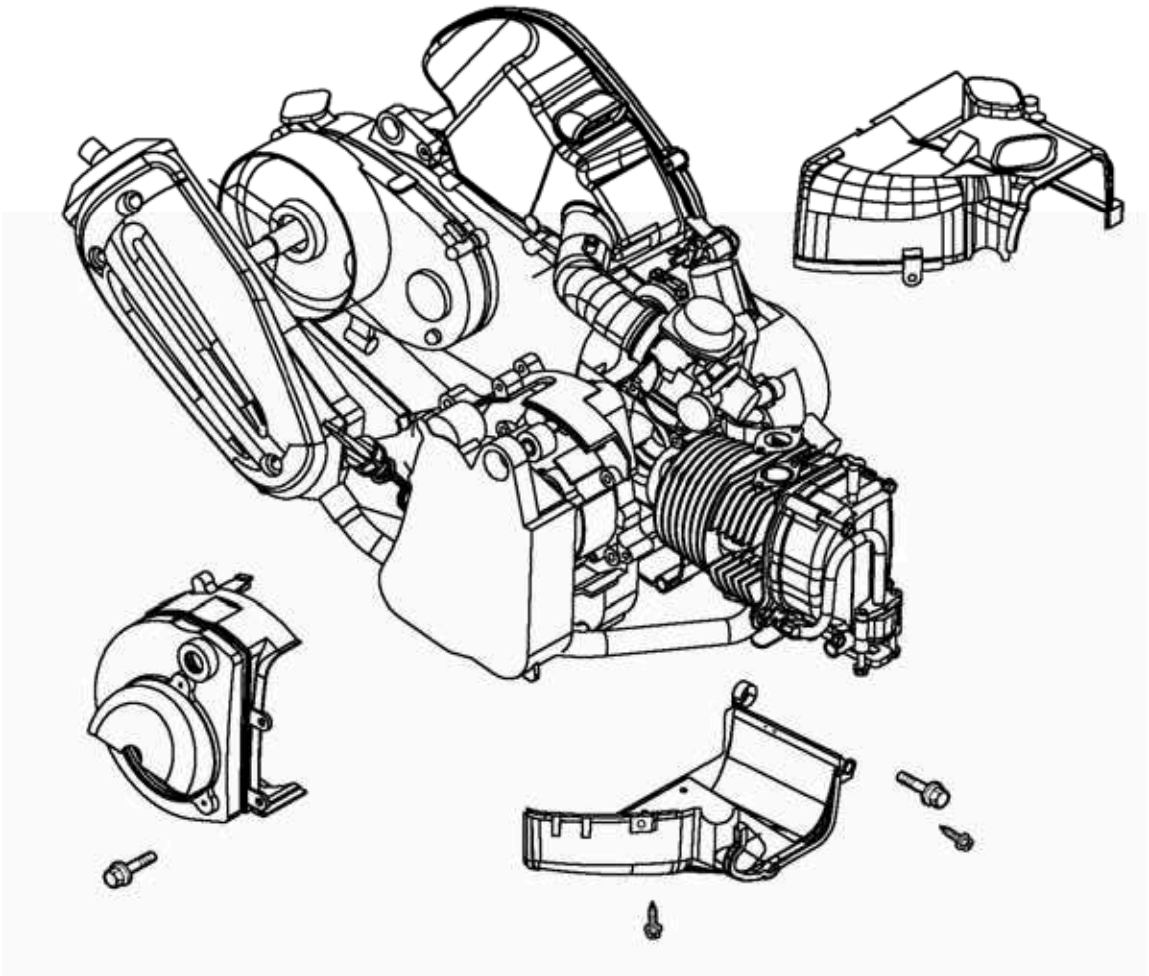
Measure the I.D. of each valve rocker arm.
Service Limits: IN: 10.10mm replace if over
EX: 10.10mm replace if over
Measure each rocker arm shaft O.D.
Service Limits: IN: 9.91mm replace if below
EX: 9.91mm replace if below

CYLINDER HEAD REMOVAL

Remove the camshaft. (⇨7-4)
Remove the carburetor. (⇨5-4)
Remove the exhaust muffler.
Remove the carburetor intake manifold.

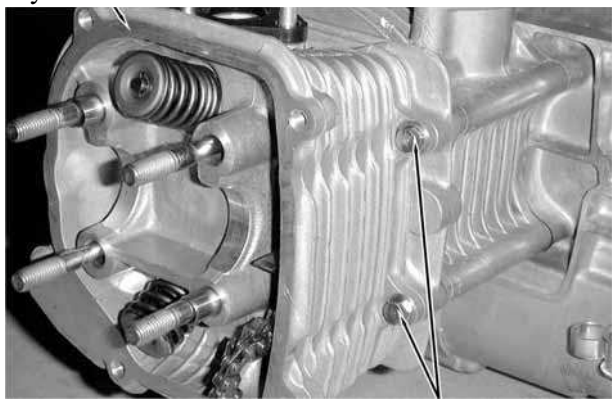
Intake Manifold

Remove the cooling fan cover. (⇨14-7)
Remove the engine cover bolts and screws.
Separate the engine cover joint claws.



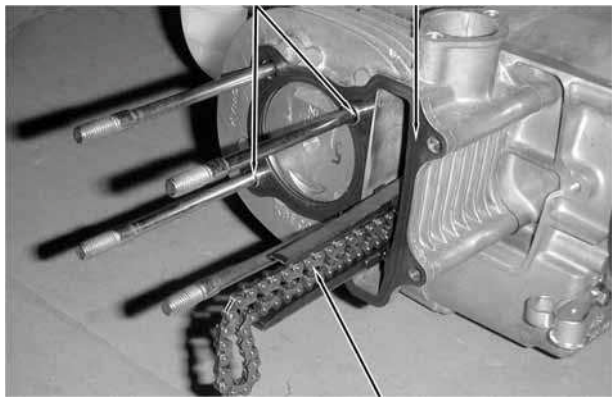
Remove the two cylinder head bolts.
Remove the cylinder head.

Cylinder Head



Bolts
Dowel Pins Cylinder Head Gasket

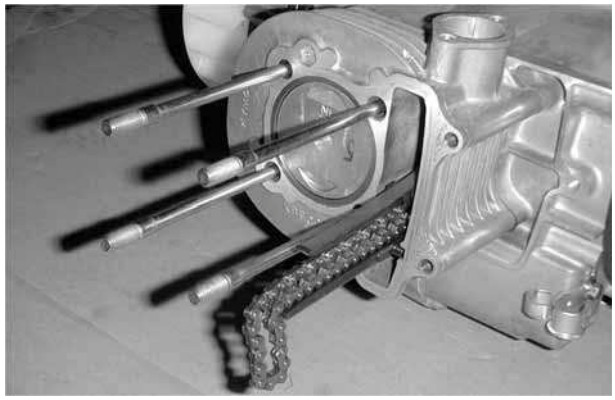
Remove the dowel pins and cylinder head gasket.
Remove the cam chain guide.



Cam Chain Guide

Remove all gasket remnants from the cylinder surface.

* • Avoid damaging the cylinder contact surface.
  • Be careful not to drop any gasket remnants into the engine.

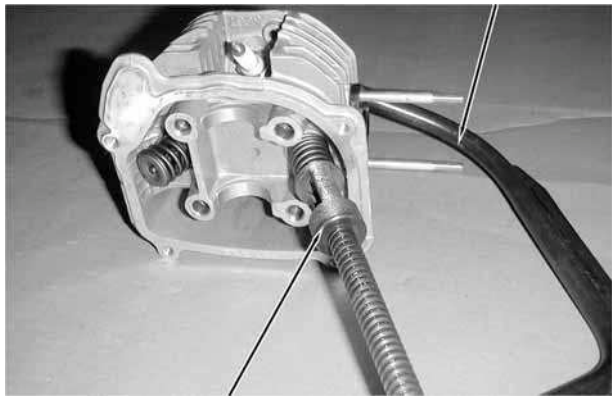


CYLINDER HEAD DISASSEMBLY

Remove the valve spring cotters, retainers, springs, spring seats and valve stem seals using a valve spring compressor.

Valve Spring Compressor

* • Be sure to compress the valve springs with a valve spring compressor.
  • Mark all disassembled parts to ensure correct reassemble.

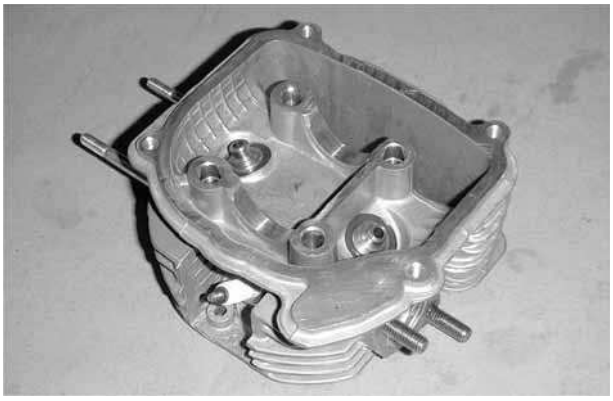


Special
Valve Spring Compressor
Valve Spring Compressor Attachment

Valve Spring Compressor Attachment

Remove carbon deposits from the combustion chamber.
Clean off any gasket remnants from the cylinder head contact surface.

* Be careful not to damage the cylinder head mating surface.

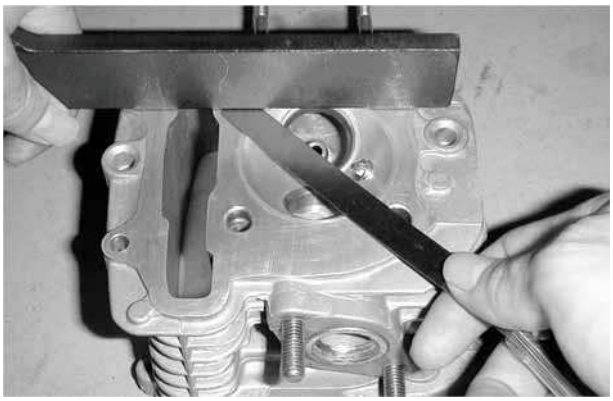


INSPECTION

CYLINDER HEAD

Check the spark plug hole and valve hole areas for cracks.
Check the cylinder head for warpage with a straight edge and feeler gauge.

Service Limit: 0.05mm repair or replace if over

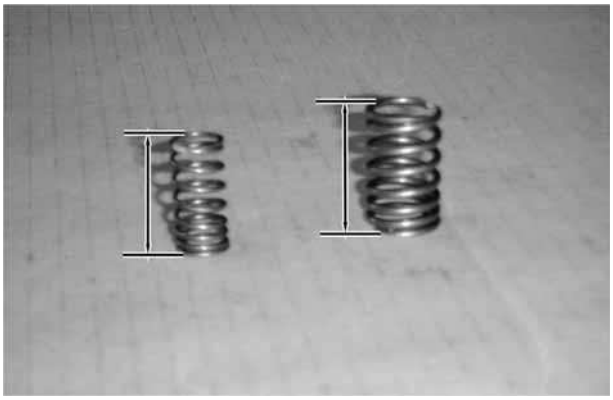


VALVE SPRING FREE LENGTH

Measure the free length of the inner and outer valve springs.

Service Limits:

Inner : 31.2mm replace if below
Outer : 34.1mm replace if below



VALVE /VALVE GUIDE

Inspect each valve for bending, burning, or abnormal stem wear.
Check valve movement in the guide.
Measure each valve stem O.D.

Service Limits: IN : 4.90mm replace if below
EX: 4.90mm replace if below

CYLINDER HEAD ASSEMBLY

Install the valve spring seats and valve stem seals.

Lubricate each valve stem with engine oil and insert the valves into the valve guides.

Be sure to install new valve stem seals.

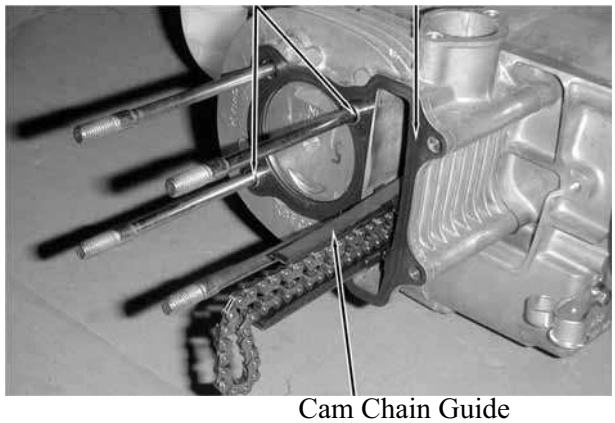
Tap the valve stems gently with a plastic hammer for 2～3 times to firmly seat the cotters.

* Be careful not to damage the valves.

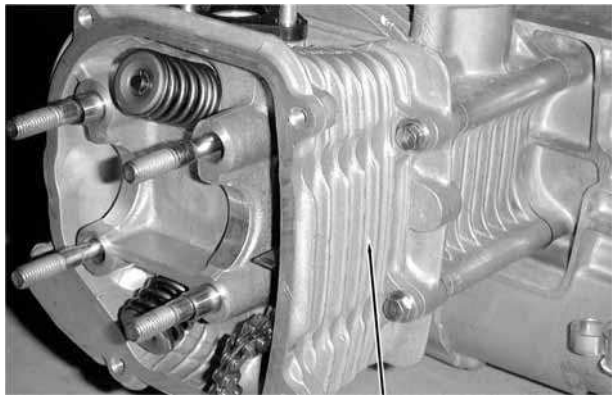
CYLINDER HEAD INSTALLATION

Install the dowel pins and a new cylinder head gasket.

Install the cam chain guide.



Install the cylinder head.

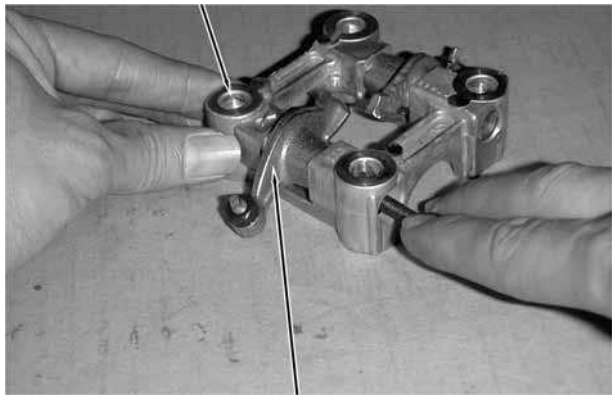


CAMSHAFT HOLDER ASSEMBLY

Install the exhaust valve rocker arm to the "EX" mark side of the camshaft holder.

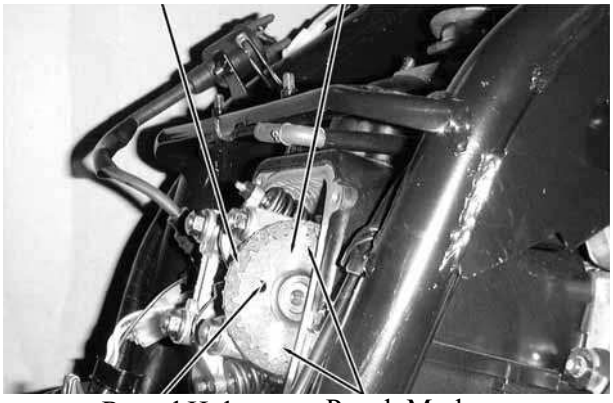
Install the intake valve rocker arm and the rocker arm shafts.

* • Align the cutout on the front end of the intake valve rocker arm shaft with the bolt of the camshaft holder.
  • Align the cross cutout on the exhaust valve rocker arm shaft with the bolt of the camshaft holder.

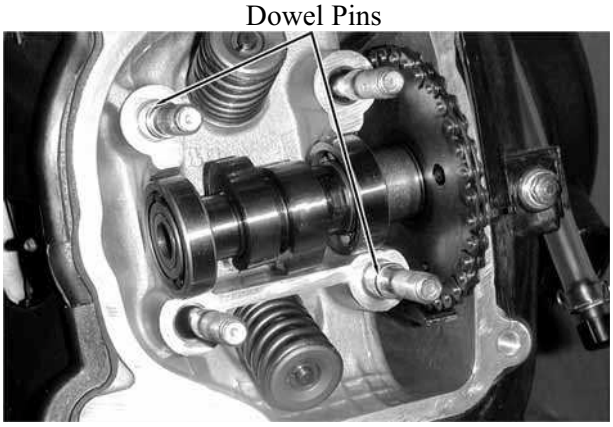


CAMSHAFT INSTALLATION

Turn the flywheel so that the "T" mark on the flywheel aligns with the index mark on the crankcase.
Keep the round hole on the camshaft gear facing up and align the punch marks on the camshaft gear with the cylinder head surface (Position the intake and exhaust cam lobes down.) and install the camshaft onto the cylinder head.
Install the cam chain over the camshaft gear.



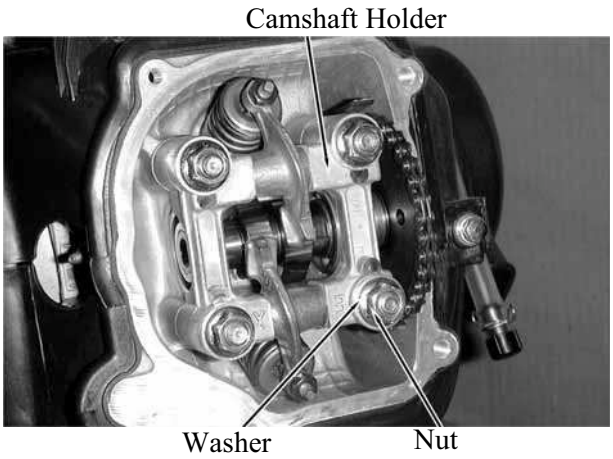
Install the dowel pins.



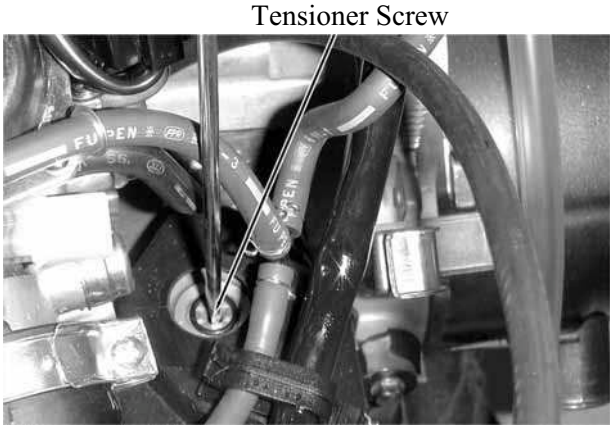
Install the camshaft holder, washers and nuts on the cylinder head.
Tighten the four cylinder head nuts and two bolts.

Torque: Cylinder head nut: 2.0kg-m

* • Apply engine oil to the threads of the cylinder head nuts.
• Diagonally tighten the cylinder head nuts in 2～3 times.



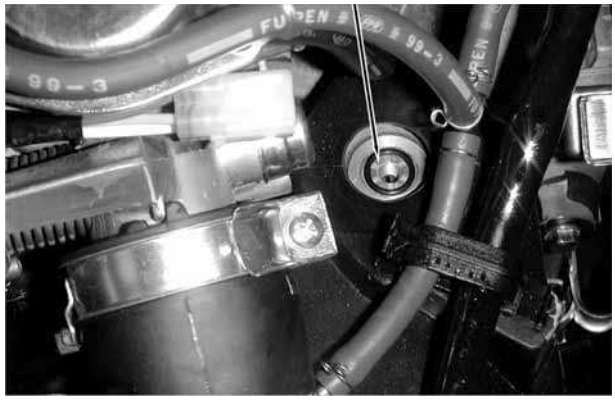
Adjust the valve clearance. (⇨3-5)
Turn the cam chain tension screw counter-clockwise to release it.



Apply engine oil to a new O-ring and install it.
Tighten the cam chain tension cap screw.

* Be sure to install the O-ring into the groove properly.

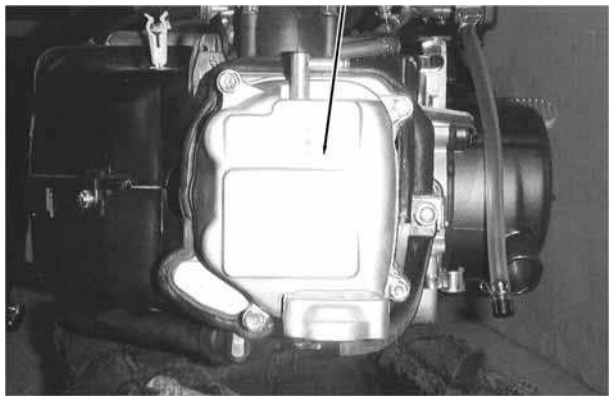
O-ring



Install a new cylinder head cover gasket and install the cylinder head cover.
Install and tighten the cylinder head cover bolts.

* Be sure to install the gasket into the groove properly.

Cylinder Head Cover



CYLINDER/PISTON

8

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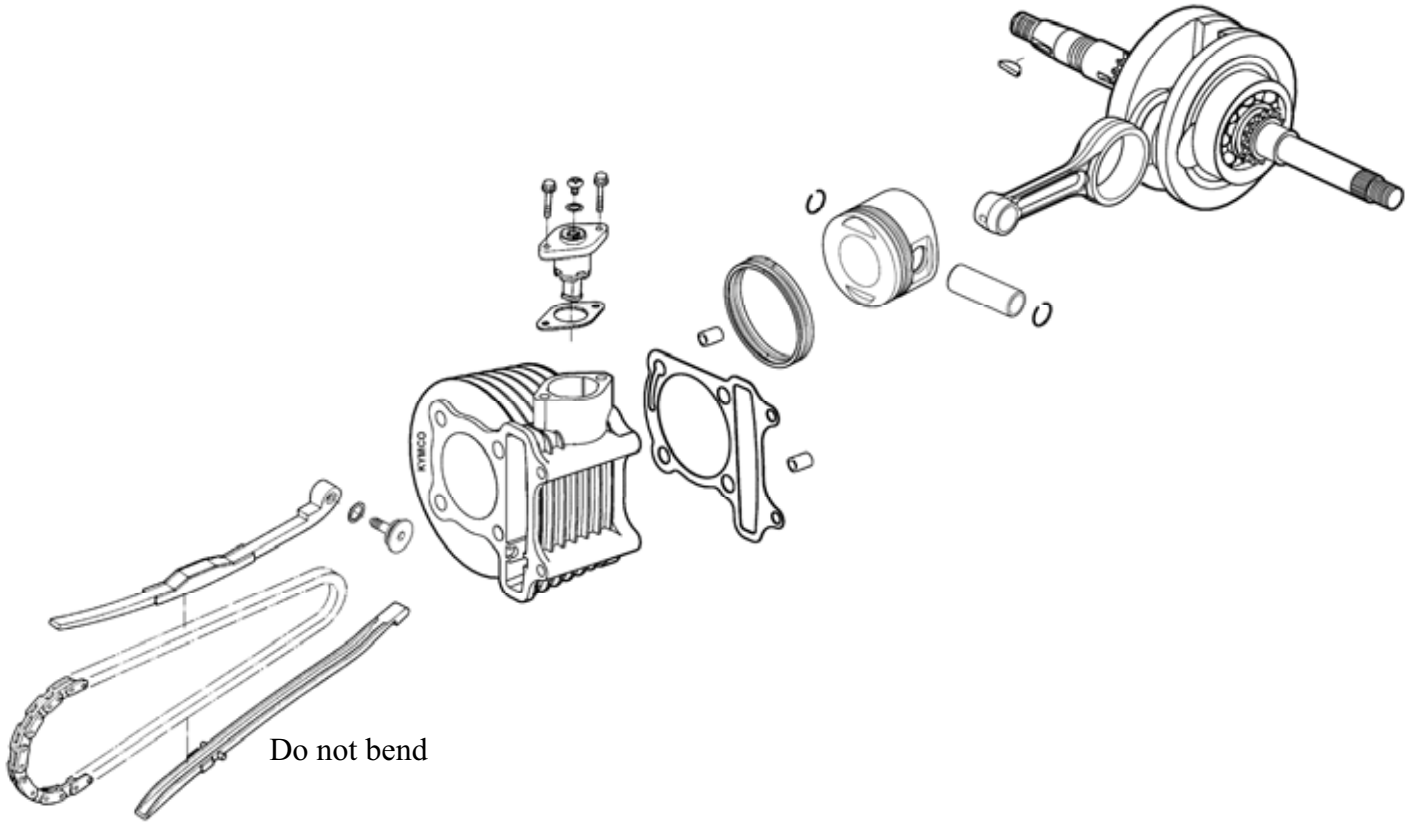
8. CYLINDER/PISTON



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The cylinder and piston can be serviced with the engine installed in the frame.
- After disassembly, clean the removed parts and dry them with compressed air before inspection.

TROUBLESHOOTING

- When hard starting or poor performance at low speed occurs, check the crankcase breather for white smoke. If white smoke is found, it means that the piston rings are worn, stuck or broken.

Compression too low

- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston

Compression too high

- Excessive carbon build-up in combustion chamber or on piston head

White smoke from exhaust muffler

- Worn or damaged piston rings
- Worn or damaged cylinder and piston

Abnormal noisy piston

- Worn cylinder, piston and piston rings
- Worn piston pin hole and piston pin

SPECIFICATIONS

Item (125cc)			Standard (mm)	Service Limit (mm)
Cylinder	I.D.		52.400～52.410	52.50
	Warpage		—	0.05
	Cylindricity		—	0.05
	True roundness		—	0.05
Piston, piston ring .	Ring-to-groove clearance	Top	0.015～0.055	0.09
		Second	0.015～0.055	0.09
	Ring end gap	Top	0.10～0.25	0.5
		Second	0.10～0.25	0.5
		Oil side rail	0.2～0.7	—
	Piston O.D.		52.370～52.390	52.3
	Piston O.D. measuring position		9mm from bottom of skirt	—
	Piston-to-cylinder clearance		0.010～0.040	0.1
	Piston pin hole I.D.		15.002～15.008	15.04
Piston pin O.D			14.994～15.000	14.96
Piston-to-piston pin clearance			0.002～0.014	0.02
Connecting rod small end I.D. bore			15.016～15.034	15.06

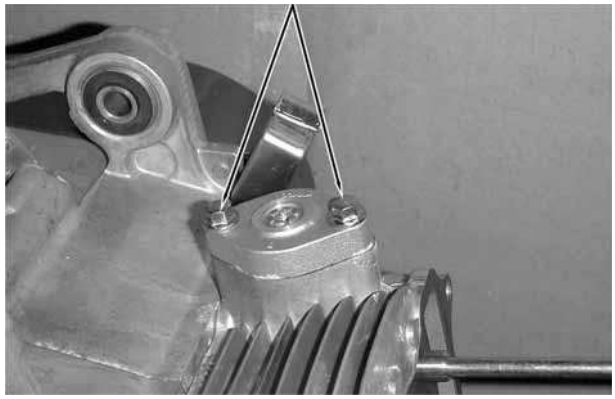
Item (150cc)			Standard (mm)	Service Limit (mm)
Cylinder	I.D.		57.405～57.415	57.50
	Warpage		—	0.05
	Cylindricity		—	0.05
	True roundness		—	0.05
Piston, piston ring .	Ring-to-groove clearance	Top	0.015～0.055	0.09
		Second	0.015～0.055	0.09
	Ring end gap	Top	0.15～0.30	0.5
		Second	0.15～0.30	0.5
		Oil side rail	0.2～0.7	—
	Piston O.D.		57.370～57.390	57.3
	Piston O.D. measuring position		9mm from bottom of skirt	—
	Piston-to-cylinder clearance		0.010～0.040	0.1
	Piston pin hole I.D.		15.002～15.008	15.04
Piston pin O.D			14.994～15.000	14.96
Piston-to-piston pin clearance			0.002～0.014	0.02
Connecting rod small end I.D. bore			15.016～15.034	15.06

CYLINDER REMOVAL

Turn the cam chain tension screw clockwise to tighten it.

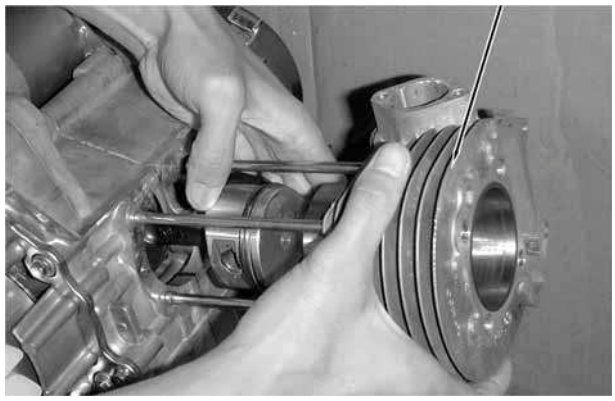
Remove the two bolts on the cam chain tension.

Bolt



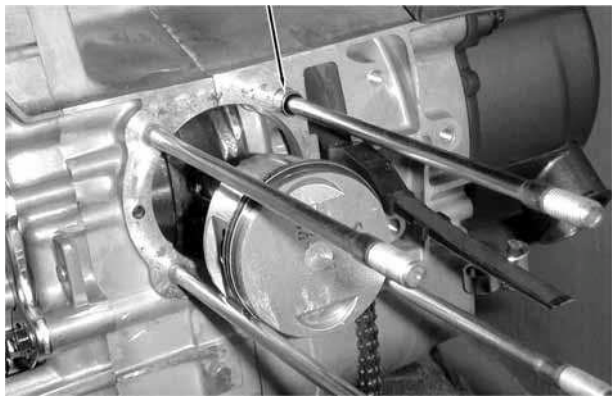
Remove the cylinder head. (⇨7-7)
Remove the cam chain guide.
Remove the cylinder base bolts.
Remove the cylinder.

Cylinder



Remove the cylinder gasket and dowel pins.
Clean any gasket remnant from the cylinder surface.

Dowel Pins



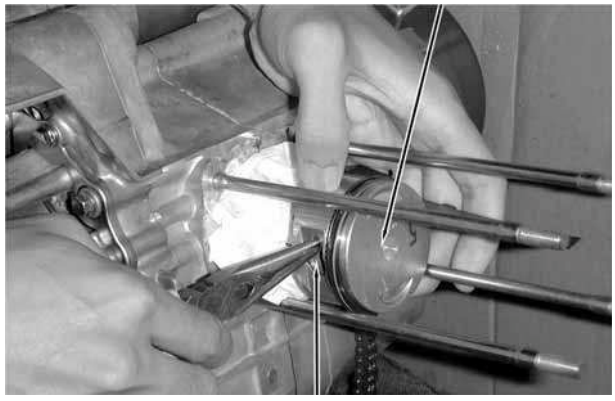
PISTON REMOVAL

Remove the piston pin clip.

* Place a clean shop towel in the crankcase to keep the piston pin clip from falling into the crankcase.

Press the piston pin out of the piston and remove the piston.

Piston



Piston Rings

8. CYLINDER/PISTON

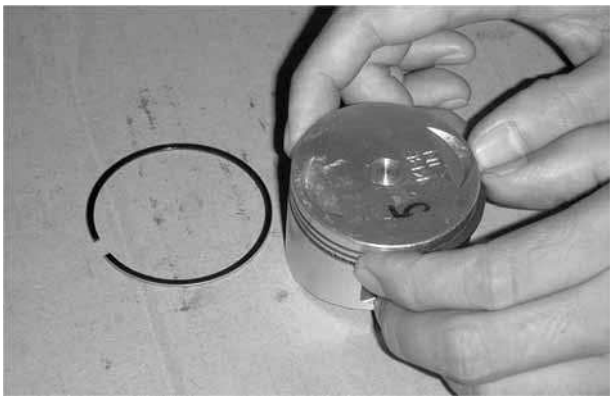
Inspect the piston, piston pin and piston rings. Remove the piston rings.

* Take care not to damage or break the piston rings during removal.

Clean carbon deposits from the piston ring grooves.

Install the piston rings onto the piston and measure the piston ring-to-groove clearance.

Service Limits: **Top**: 0.09mm replace if over
2nd: 0.09mm replace if over



Remove the piston rings and insert each piston ring into the cylinder bottom.

* Use the piston head to push each piston ring into the cylinder.

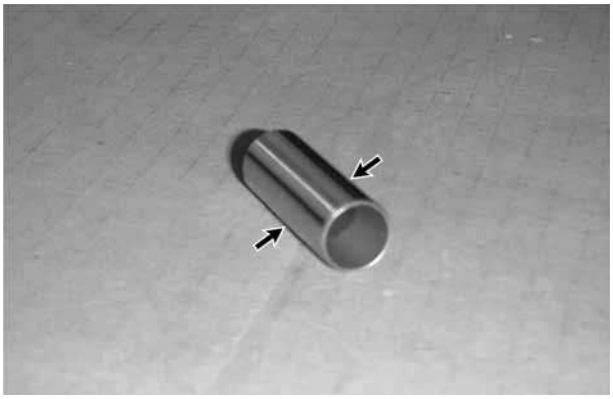
Measure the piston ring end gap.

Service Limit: 0.5mm replace if over

Measure the piston pin hole I.D.

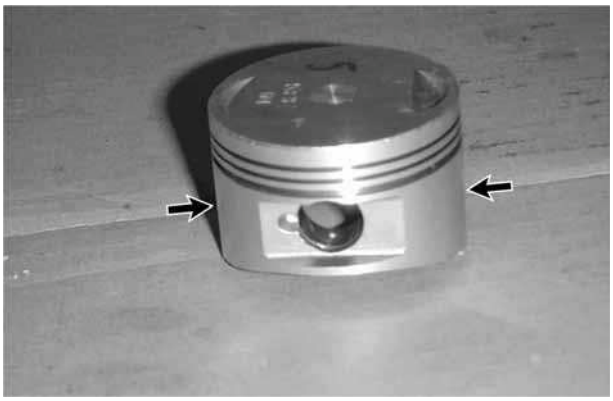
Service Limit: 15.04mm replace if over

Measure the piston pin O.D.
Service Limit: 14.96mm replace if below



Measure the piston O.D.

* Take measurement at 9mm from the bottom and 90° to the piston pin hole.



(125cc) Service Limit: 52.3mm replace if below

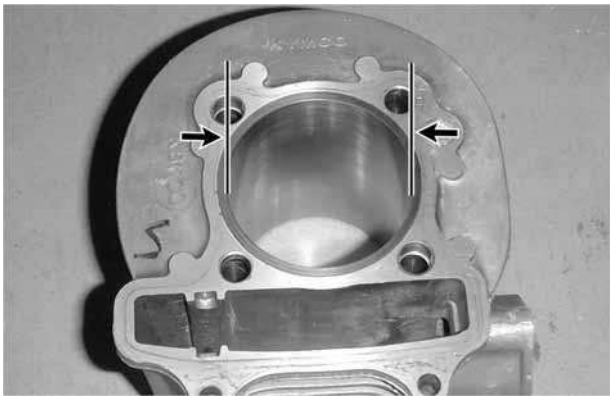
(150cc) Service Limit: 57.3mm replace if below

Measure the piston-to-piston pin clearance.
Service Limit: 0.02mm replace if over

CYLINDER INSPECTION

Inspect the cylinder bore for wear or damage. Measure the cylinder I.D. at three levels of top, middle and bottom at 90° to the piston pin (in both X and Y directions).

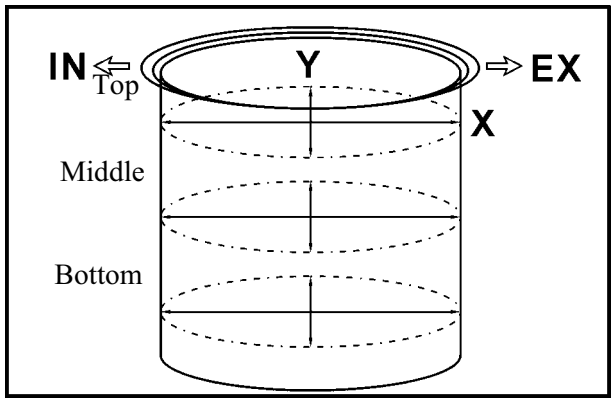
(125cc) Service Limit: 52.50mm repair or replace if over
(150cc) Service Limit: 57.50mm repair or replace if over
Measure the cylinder-to-piston clearance.



The true roundness is the difference between the values measured in X and Y directions. The cylindricity (difference between the values measured at the three levels) is subject to the maximum value calculated.

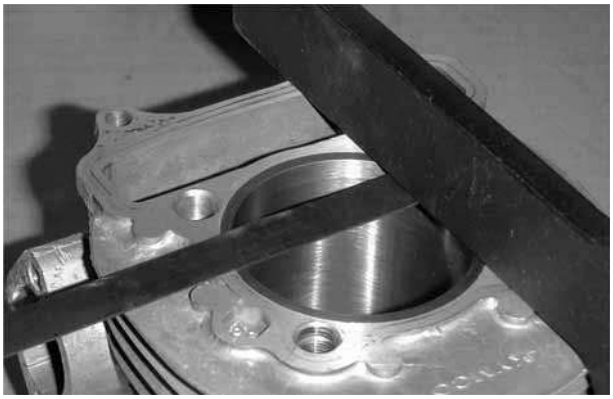
Service Limits:

True Roundness: 0.05mm repair or replace if over
Cylindricity: 0.05mm repair or replace if over

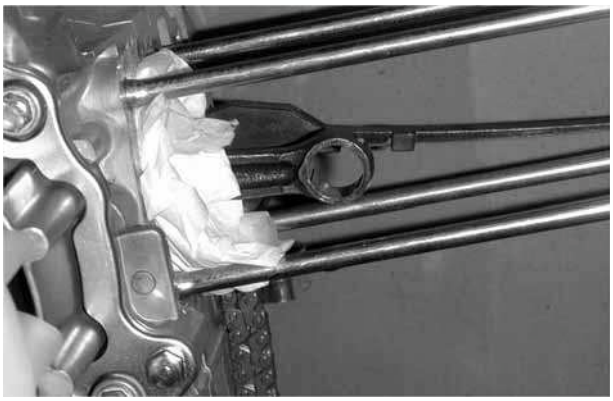


8. CYLINDER/PISTON

Inspect the top of the cylinder for warpage.
Service Limit: 0.05mm repair or replace if over



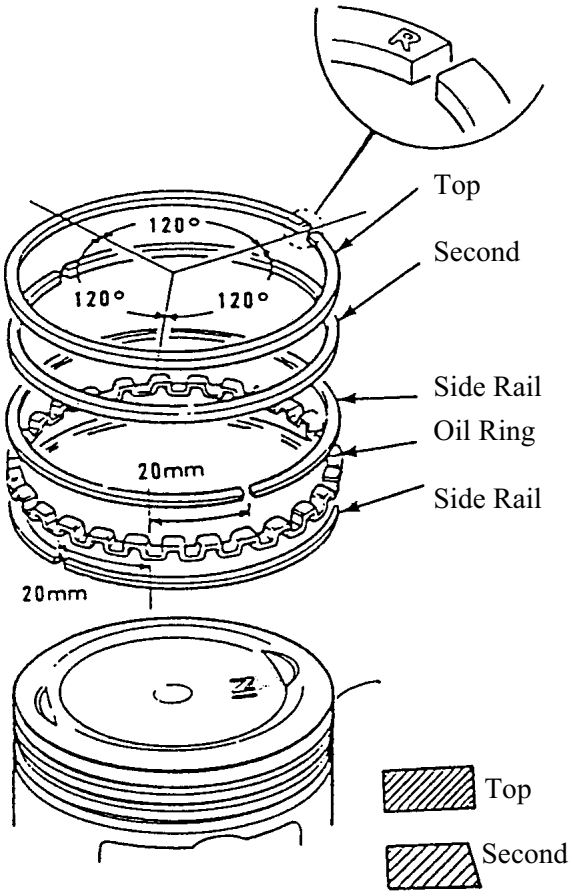
Measure the connecting rod small end I.D.
Service Limit: 15.06mm replace if over



PISTON RING INSTALLATION

Install the piston rings onto the piston.
Apply engine oil to each piston ring.

*
- Be careful not to damage or break the piston and piston rings.
- All rings should be installed with the markings facing up.
- After installing the rings, they should rotate freely without sticking.



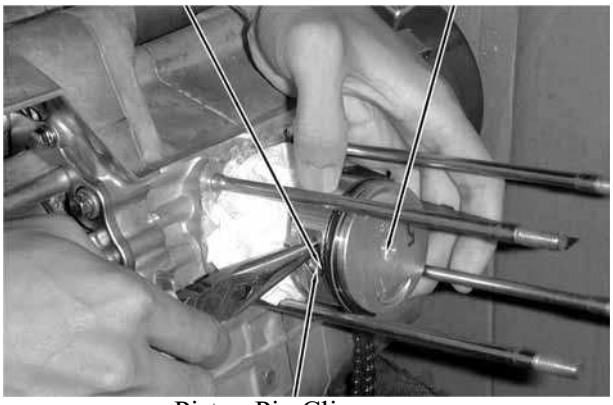
PISTON INSTALLATION

Remove any gasket remnant from the crankcase surface.

* Be careful not to drop foreign matters into the crankcase.

Piston Pin Piston

Install the piston, piston pin and a new piston pin clip.



Piston Pin Clip

* • Position the piston "IN" mark on the intake valve side.
  • Place a clean shop towel in the crankcase to keep the piston pin clip from falling into the crankcase.

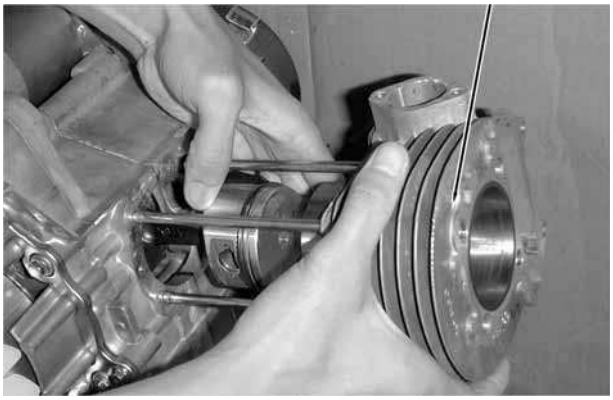
Cylinder

CYLINDER INSTALLATION

Install the dowel pins and a new cylinder gasket on the crankcase.

Coat the cylinder bore, piston and piston rings with clean engine oil.

Carefully lower the cylinder over the piston by compressing the piston rings.

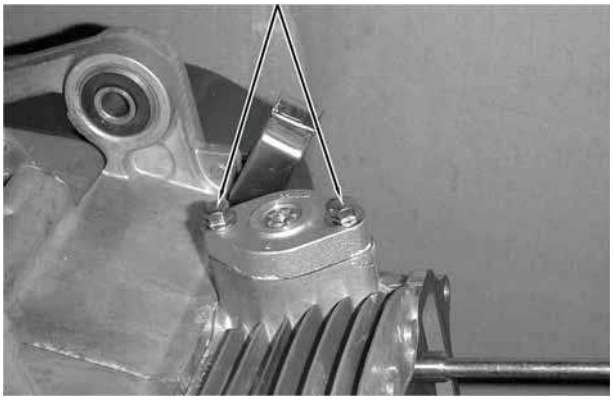


* • Be careful not to damage or break the piston rings.
  • Stagger the ring end gaps at 120° to the piston pin.

Bolt

Loosely install the cylinder base bolts.

Install the cam chain guide.



Install the cam chain tension.

Tighten the cam chain tension bolts.

DRIVE AND DRIVEN PULLEYS/KICK STARTER

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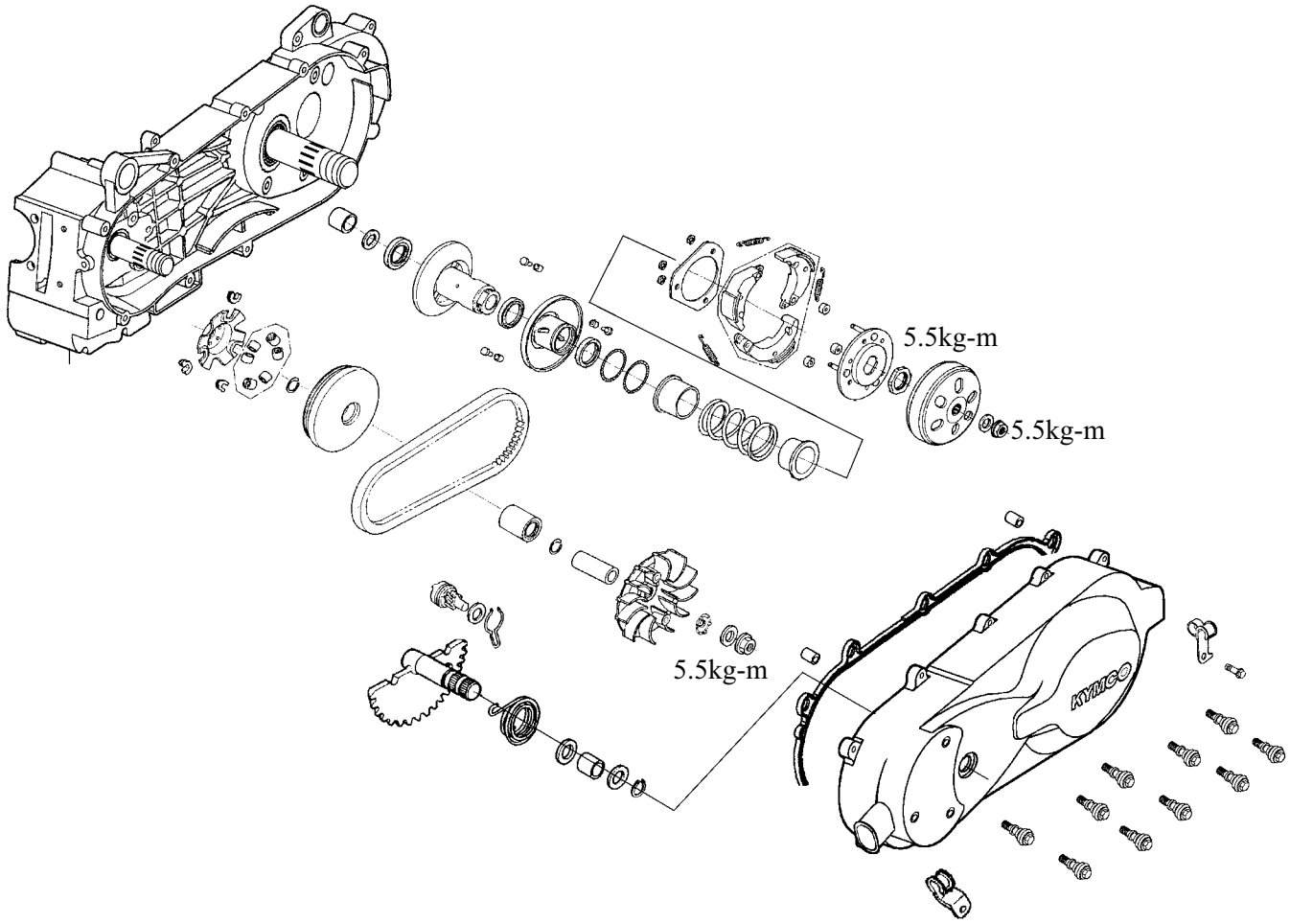
DRIVE PULLEY 9-3
CLUTCH/DRIVEN PULLEY 9-7
KICK STARTER 9-14


5.5kg-m
5.5kg-m
5.5kg-m
KYMCO

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The drive pulley, clutch and driven pulley can be serviced with the engine installed.
- Avoid getting grease and oil on the drive belt and pulley faces. Remove any oil or grease from them to minimize the slipping of drive belt and drive pulley.

SPECIFICATIONS

Item	Standard (mm)	Service Limit (mm)
Movable drive face bushing I.D.	24.011～24.052	24.06
Drive face collar O.D.	23.960～23.974	23.94
Drive belt width	20.0～21.0	19.0
Clutch lining thickness	—	1.5
Clutch outer I.D.	125.0～125.2	125.5
Driven face spring free length	—	163.7
Driven face O.D.	33.965～33.485	33.94
Movable driven face I.D.	34.000～34.025	34.06
Weight roller O.D.	17.920～18.080	17.40

TORQUE VALUES

Drive face nut	5.5kg-m
Clutch outer nut	5.5kg-m

SPECIAL TOOLS

Universal holder
Driver handle A
Pilot, 20mm
Clutch spring compressor
Lock nut wrench, 39mm
Flywheel holder
Bearing driver

TROUBLESHOOTING

Engine starts but motorcycle won't move

- Worn drive belt
- Broken ramp plate
- Worn or damaged clutch lining
- Broken driven face spring

Engine stalls or motorcycle creeps

- Broken clutch weight spring

Lack of power

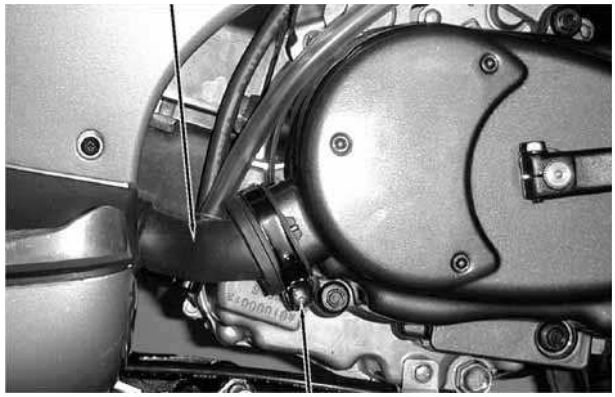
- Worn drive belt
- Weak driven face spring
- Worn weight roller
- Fouled drive face

LEFT CRANKCASE COVER

REMOVAL

Loosen the drive belt air tube band screw.

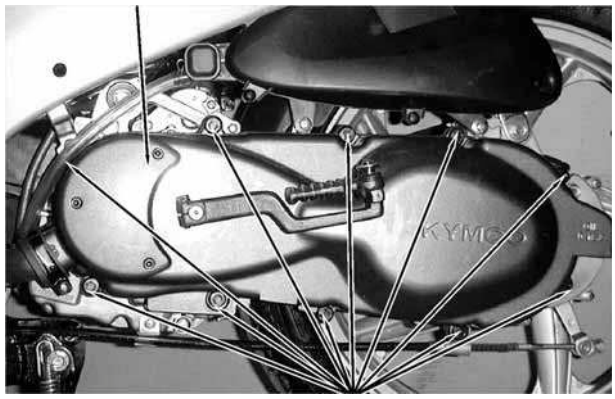
Air Tube Band



Screw

Remove the left crankcase cover bolts and left crankcase cover.
Remove the seal rubber and dowel pins.

Left Crankcase Cover



Bolts

DRIVE PULLEY

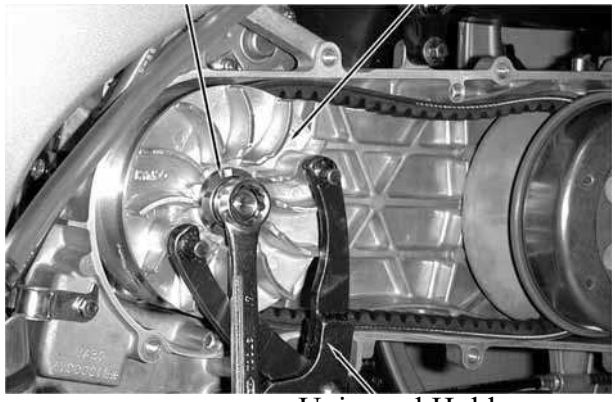
REMOVAL

Hold the drive pulley using an universal holder and remove the drive face nut and starting ratchet.
Remove the drive pulley face.

Special

Universal Holder

Starting Ratchet Drive Pulley Face



Universal Holder

CLUTCH/DRIVEN PULLEY

Remove the drive pulley and drive belt.
Hold the clutch outer with the flywheel holder and remove the clutch outer nut.
Remove the clutch outer.
Remove the clutch/driven pulley and drive belt.

Special

Flywheel Holder

Clutch Outer

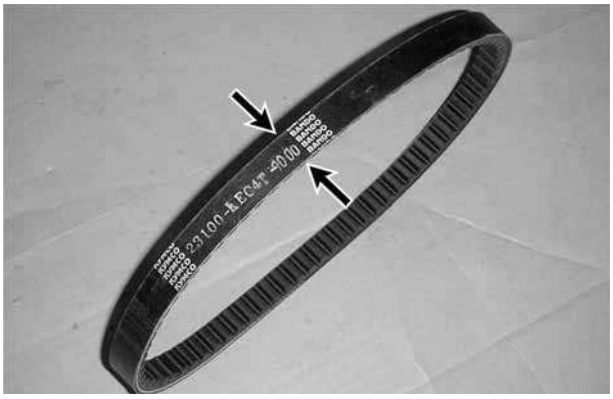
Flywheel Holder

INSPECTION

Check the drive belt for cracks, separation or abnormal or excessive wear.
Measure the drive belt width.

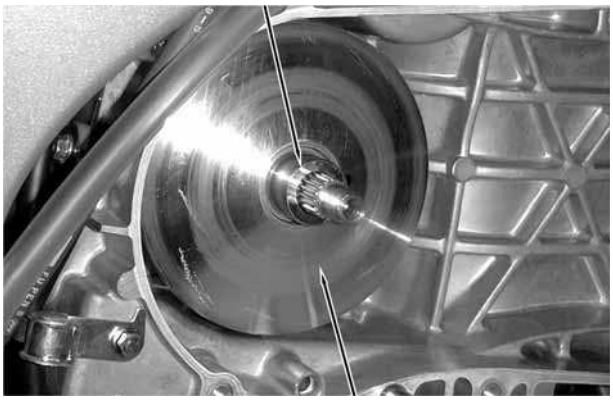
Service Limit: 19.0mm replace if below

* Use specified genuine parts for replacement.



Drive Pulley Collar

Remove the movable drive face assembly.
Remove the drive pulley collar.

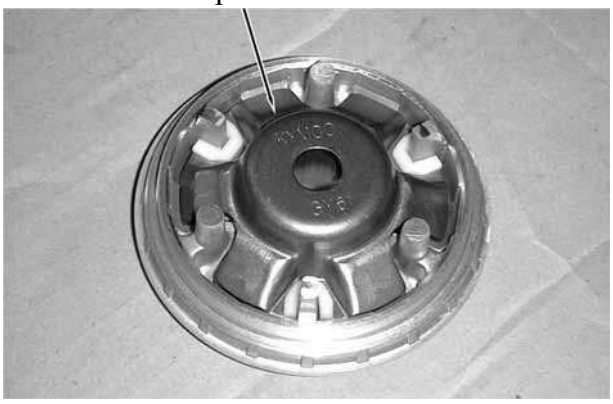


Movable Drive Face Assembly

Ramp Plate

DISASSEMBLY

Remove the ramp plate.



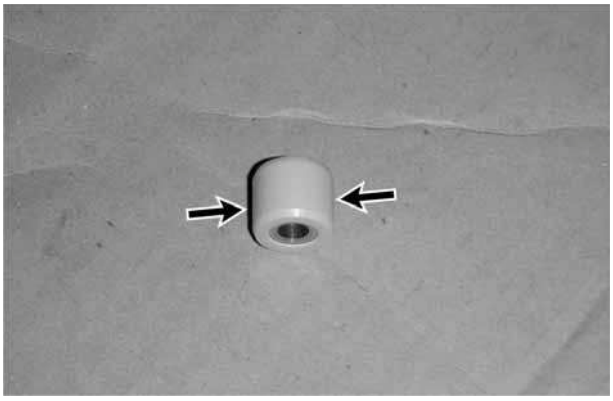
Weight Rollers

Remove the weight rollers.

INSPECTION

Check each weight roller for wear or damage.
Measure each weight roller O.D.

Service Limit: 17.4mm replace if below

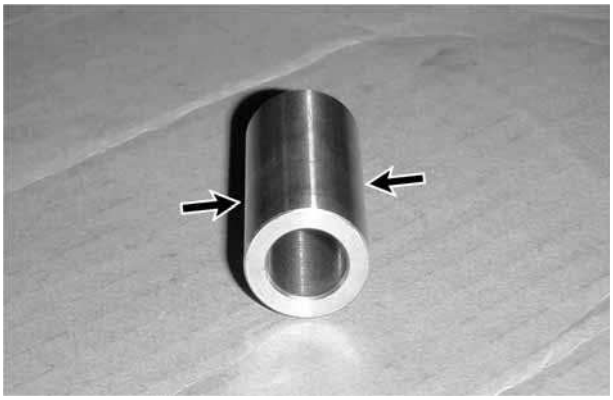


Measure the movable drive face bushing I.D.

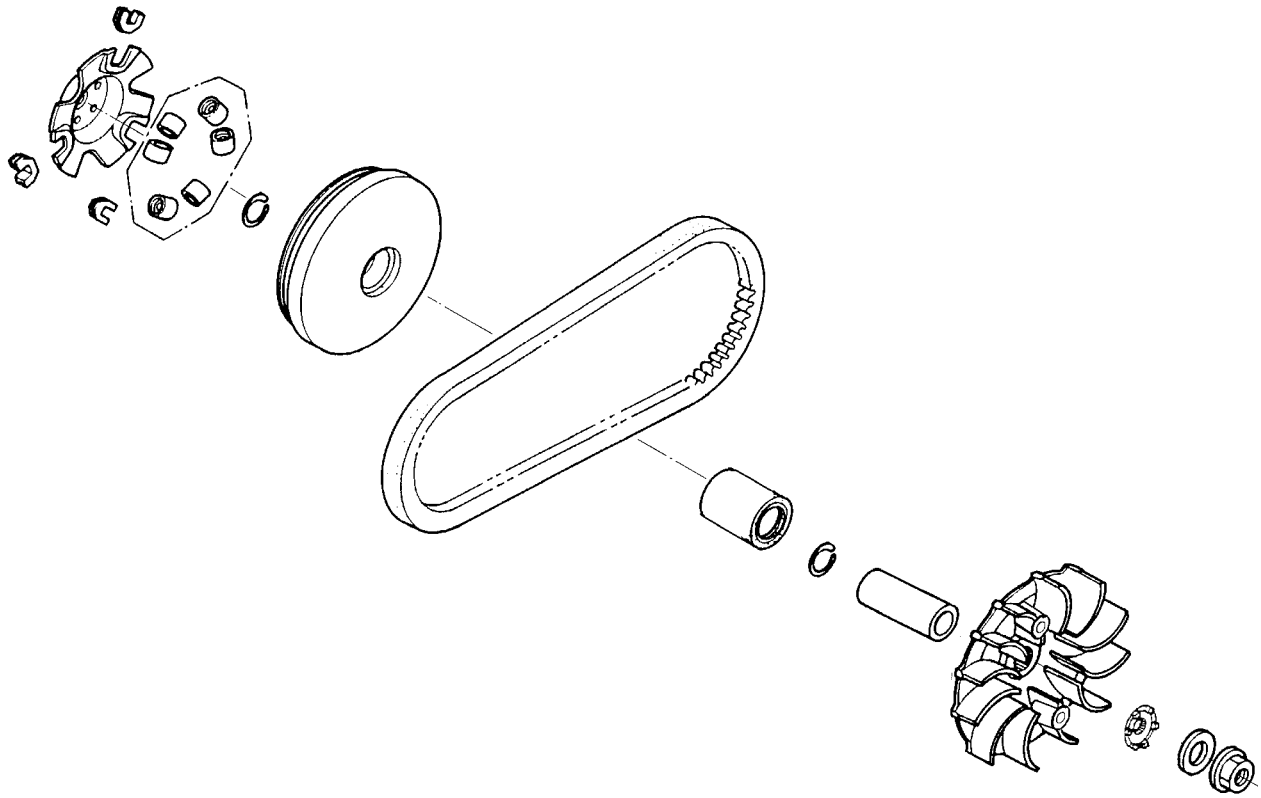
Service Limit: 24.06mm replace if over

Check the drive pulley bushing for wear or damage.
Measure the O.D. of the drive pulley bushing sliding surface.

Service Limit: 23.94mm replace if below



ASSEMBLY



Install the weight rollers into the movable drive face.

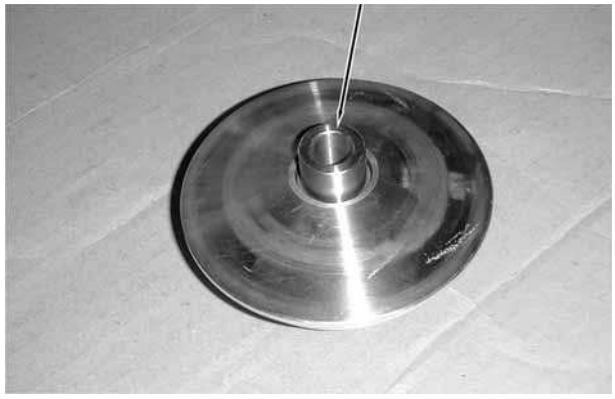
Weight Roller

Ramp Plate

Install the ramp plate.

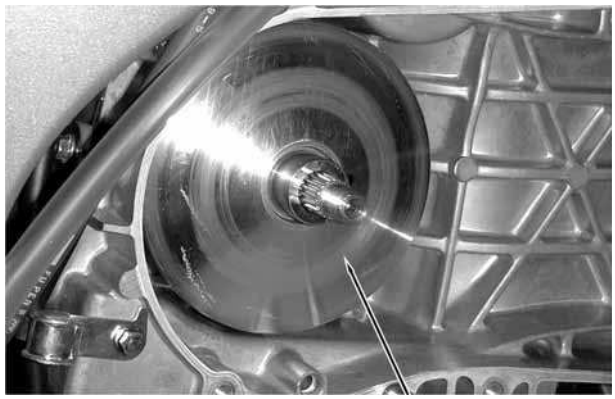
Insert the drive pulley collar into the movable drive face.

Drive Pulley Collar



INSTALLATION

Install the movable drive face onto the crankshaft.

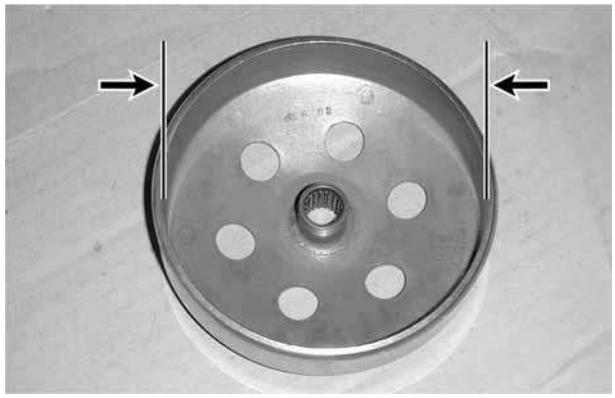


Movable Drive Face Assembly

INSPECTION

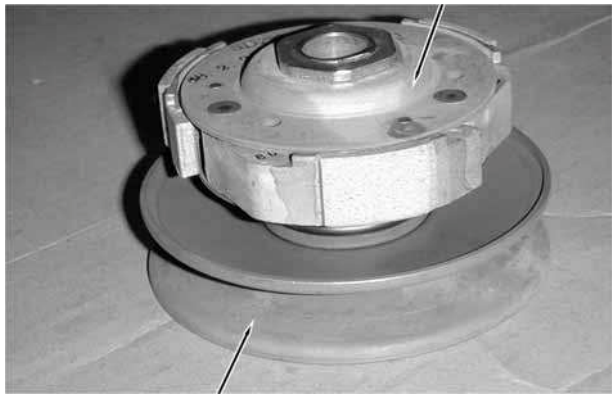
Inspect the clutch outer for wear or damage.
Measure the clutch outer I.D.

Service Limit: 125.5mm replace if over



Clutch

CLUTCH/DRIVEN PULLEY DISASSEMBLY



Driven Pulley

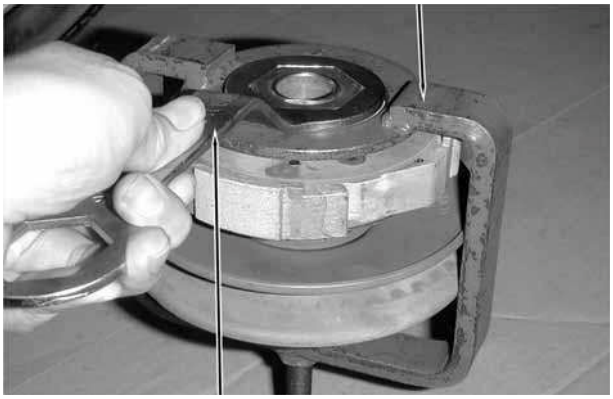
Hold the clutch/driven pulley assembly with the clutch spring compressor.

* Be sure to use a clutch spring compressor to avoid spring damage.

Special
Clutch Spring Compressor

Set the clutch spring compressor in a vise and remove the clutch drive plate nut.

Clutch Spring Compressor



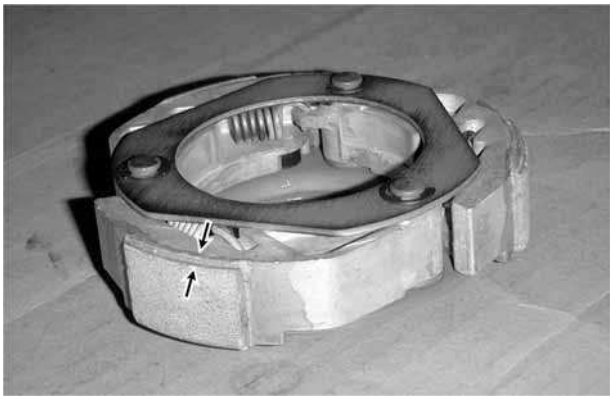
Special
Lock Nut Wrench, 39mm

Loosen the clutch spring compressor and disassemble the clutch/driven pulley assembly. Remove the seal collar.

Lock Nut Wrench

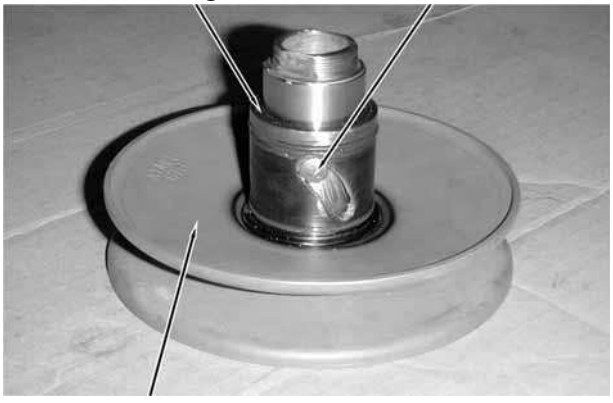
Check the driven face for wear or damage. Measure the clutch lining thickness.

Service Limit: 33.94mm replace if below



Pull out the guide roller pins and guide rollers. Remove the movable driven face from the driven face.

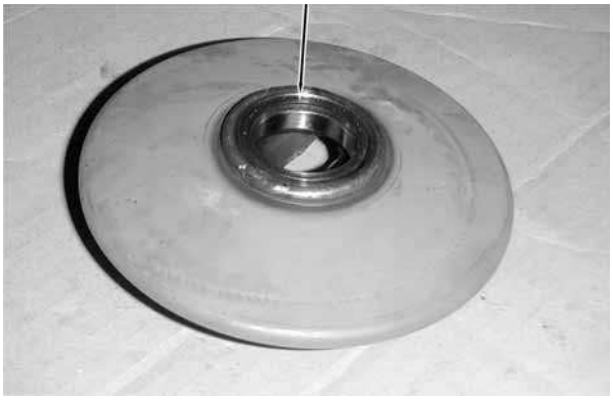
O-ring Guide Roller Pin



Movable Driven

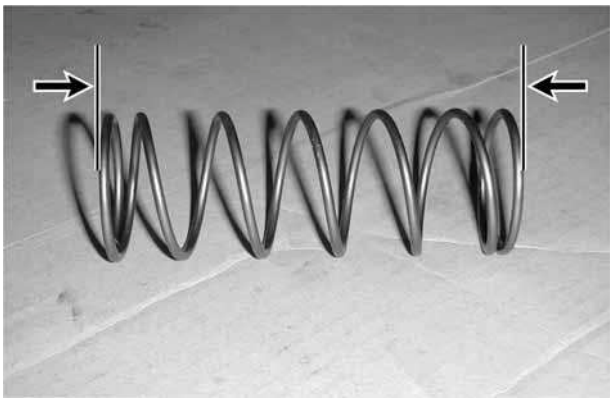
Remove the oil seal from the movable driven face.

Oil Seal

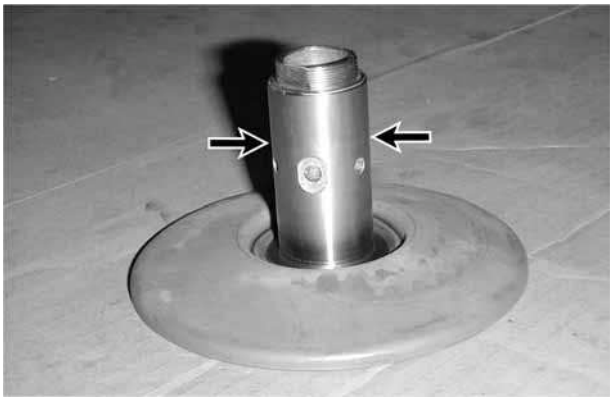


INSPECTION

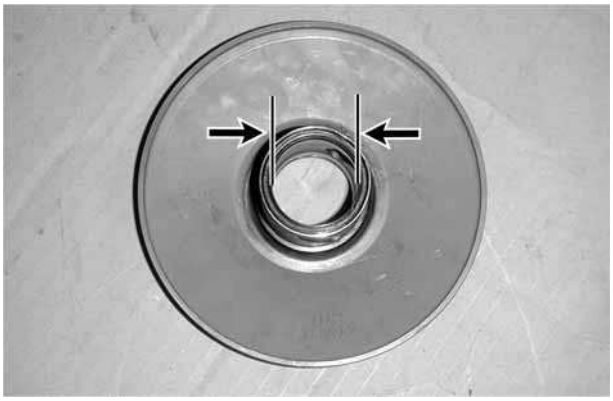
Measure the driven face spring free length.
Service Limit: 163.7mm replace if below



Check the driven face for wear or damage.
Measure the driven face O.D.
Service Limit: 33.94mm replace if below



Check the movable driven face for wear or damage.
Measure the movable driven face I.D.
Service Limit: 34.06mm replace if over

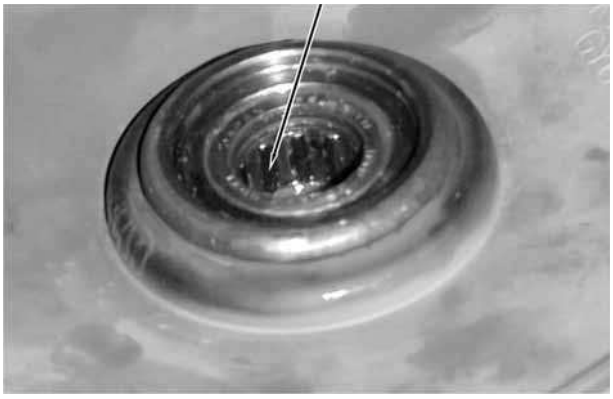


DRIVEN PULLEY FACE BEARING REPLACEMENT

Drive the inner needle bearing out of the driven pulley face.

* Discard the removed bearing and replace with a new one.

Inner Bearing



Remove the snap ring and drive the outer bearing out of the driven face.

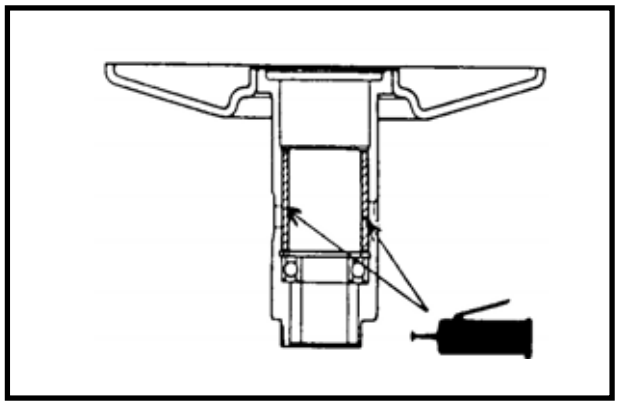
* Discard the removed bearing and replace with a new one.

Outer Bearing

Apply grease to the outer bearing.
Drive a new outer bearing into the driven face with the sealed end facing up.

Special

Bearing Driver



Seat the snap ring in its groove.
Apply grease to the driven face bore areas.

* Pack all bearing cavities with 9～9.5g grease.
  Specified grease: Heat resistance 230°C

Press a new needle bearing into the driven face.

Special

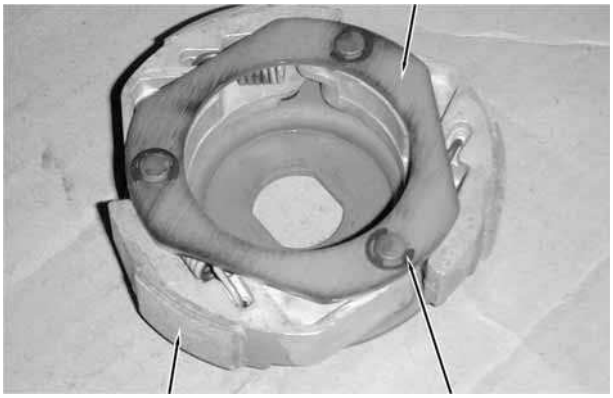
Bearing Driver
Pilot, 20mm

CLUTCH DISASSEMBLY

Remove the circlips and retainer plate to disassemble the clutch.

* Keep grease off the clutch linings.

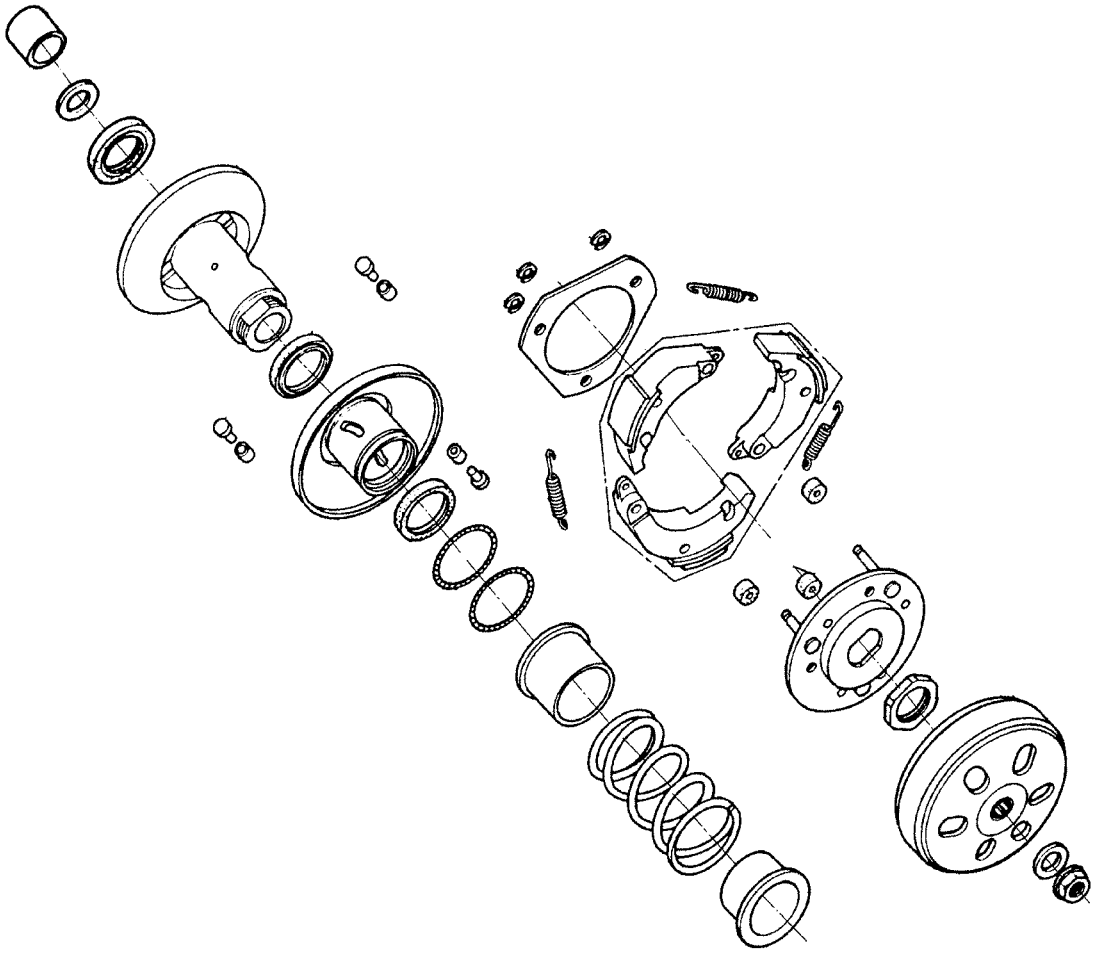
Retainer Plate



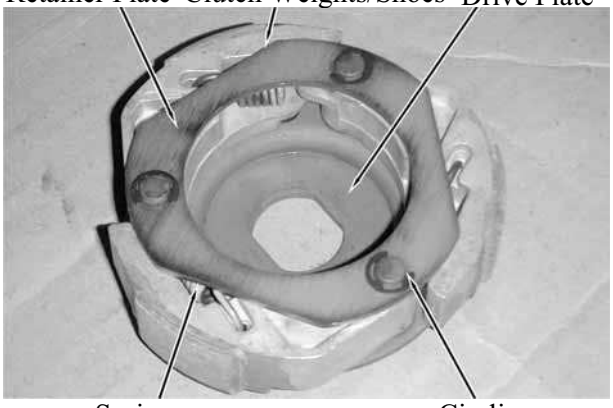
Clutch Lining

Circlip

CLUTCH / DRIVEN PULLEY ASSEMBLY

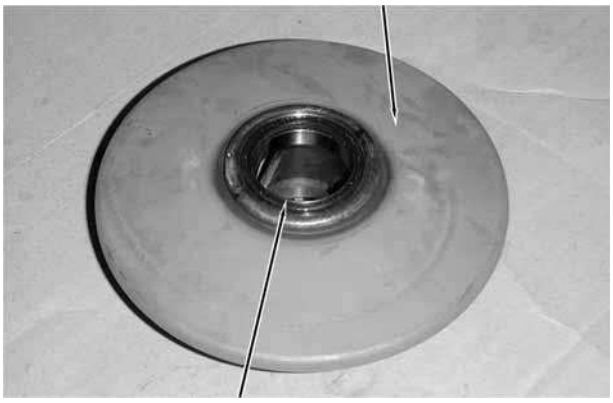


Install the damper rubbers on the drive plate pins.
Install the clutch weights/shoes and clutch springs onto the drive plate.
Install the retainer plate and secure with the circlips.

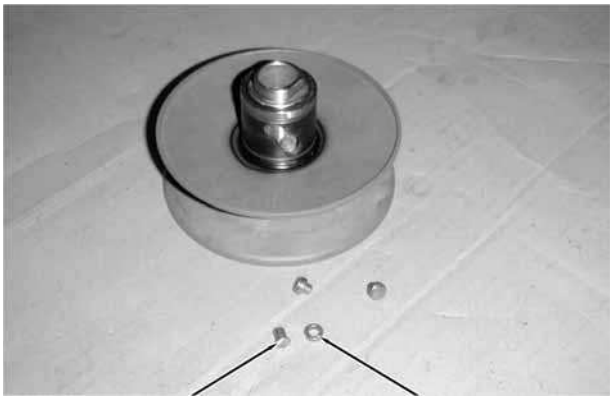


CLUTCH/DRIVEN PULLEY ASSEMBLY

Clean the driven pulley faces and remove any grease from them.
Install the oil seal onto the moveable driven face.
Apply grease to the O-rings and install them onto the moveable driven face.



Install the movable driven face onto the driven face.
Apply grease to the guide rollers and guide roller pins and then install them into the holes of the driven face.

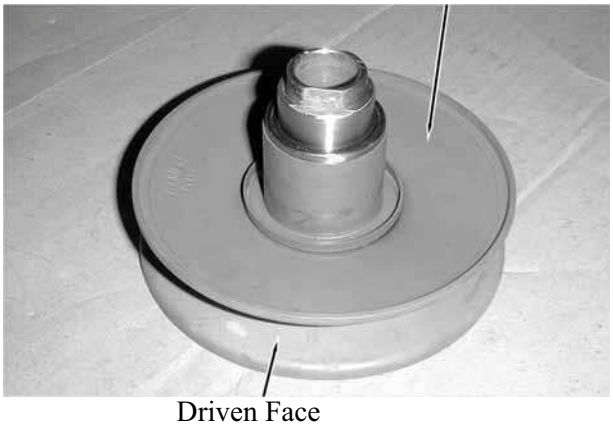


Install the seal collar.
Remove any excessive grease.

* Be sure to clean the driven face off any grease.

Set the driven pulley assembly, driven face spring and clutch assembly onto the clutch spring compressor.

* Align the flat surface of the driven face with the flat on the clutch drive plate.

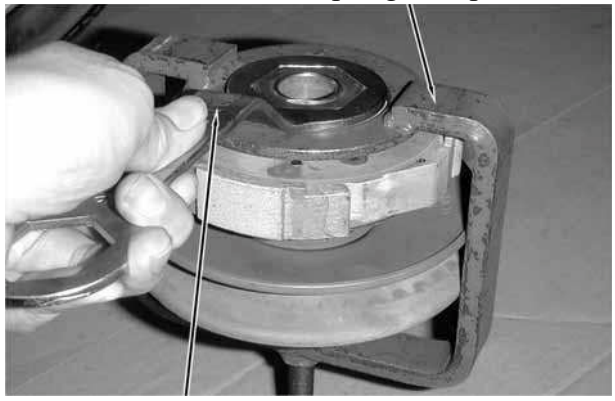


Compress the clutch spring compressor and install the drive plate nut.
Set the clutch spring compressor in a vise and tighten the drive plate nut to the specified torque.

Torque: 5.5kg-m

* Be sure to use a clutch spring compressor to avoid spring damage.

Clutch Spring Compressor



Lock Nut Wrench

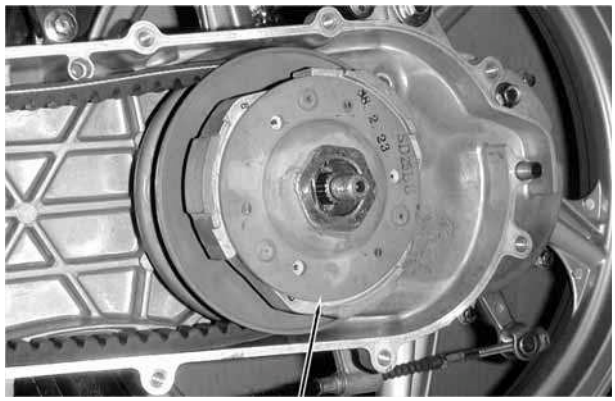
Special

Clutch Spring Compressor

INSTALLATION

Install the clutch/driven pulley onto the drive shaft.

* Keep grease off the drive shaft.



Clutch/Driven Pulley

Clutch Outer

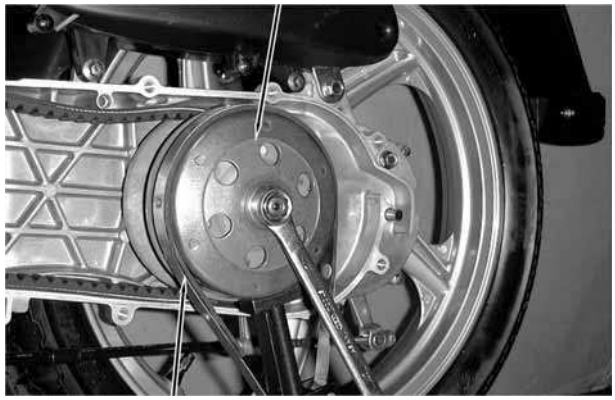
Install the clutch outer.
Hold the clutch outer with the flywheel holder.
Install and tighten the clutch outer nut.

Torque: 5.5kg-m

Special

Flywheel Holder

Install the drive belt.



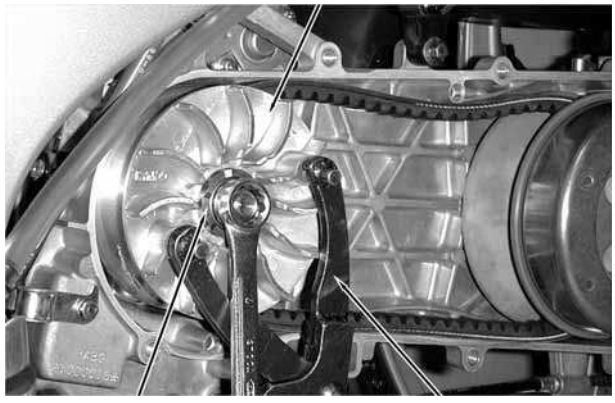
Flywheel Holder

Drive Pulley

Install the drive pulley face, starting ratchet and drive face nut.

* When installing the drive pulley face, compress it to let the drive belt move downward to the lowest position so that the drive pulley can be tightened.
  Install the starting ratchet by aligning the starting ratchet teeth with the crankshaft teeth.
  Do not get oil or grease on the drive belt or pulley faces.

Torque: 5.5kg-m



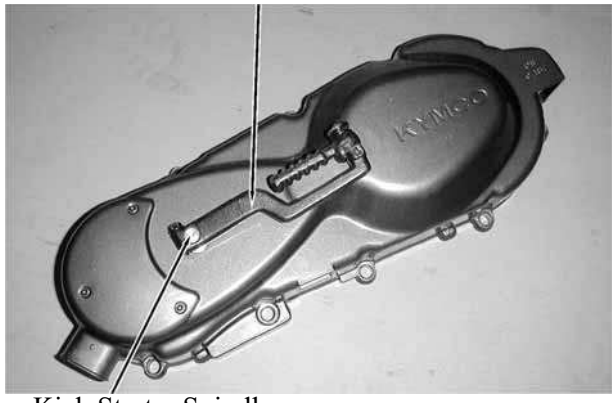
Starting Ratchet Universal Holder

KICK STARTER

REMOVAL

Remove the left crankcase cover. (⇨9-2)
Remove the seal rubber and dowel pins.
Remove the kick lever.
Remove the circlip and washer from the kick starter spindle.

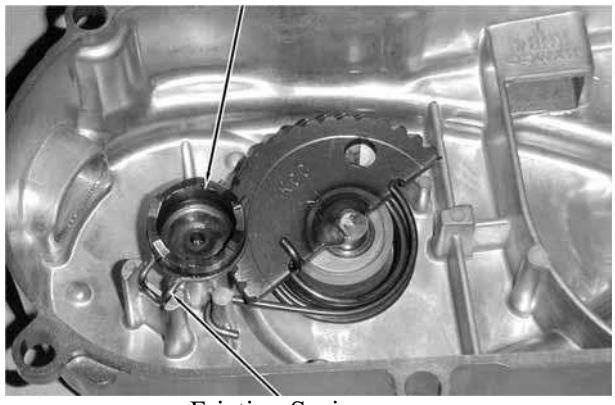
Kick Lever



Kick Starter Spindle

Gently turn the kick starter spindle to remove the starter driven gear together with the friction spring.

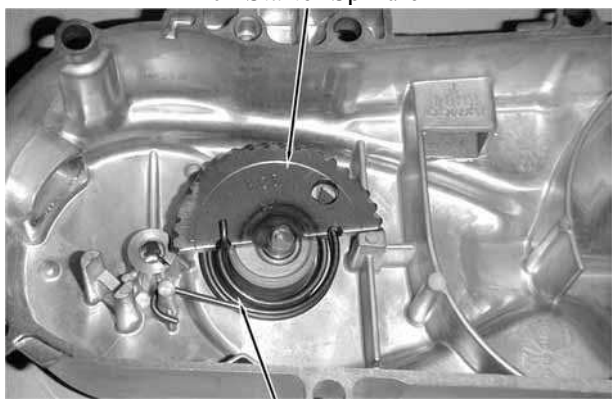
Starter Driven Gear



Friction Spring

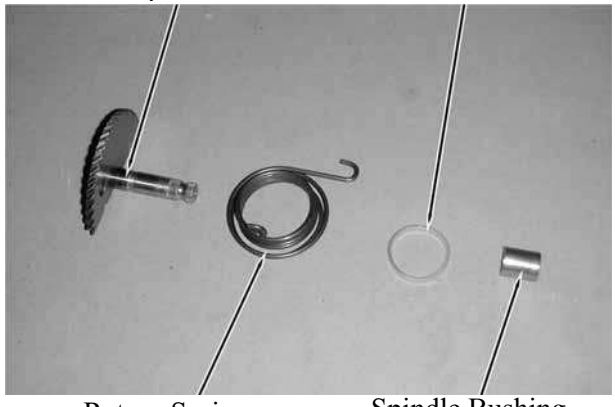
Remove the kick starter spindle and return spring from the left crankcase cover.
Remove the kick starter spindle bushing.

Kick Starter Spindle



Return Spring

Spindle Plastic Bushing



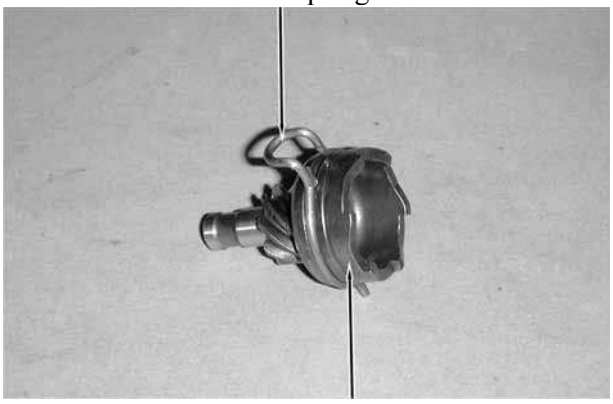
Return Spring Spindle Bushing

INSPECTION

Inspect the kick starter spindle and gear for wear or damage.
Inspect the return spring for weakness or damage.
Inspect the kick starter spindle bushings for wear or damage.

Inspect the starter driven gear for wear or damage.
Inspect the friction spring for wear or damage.

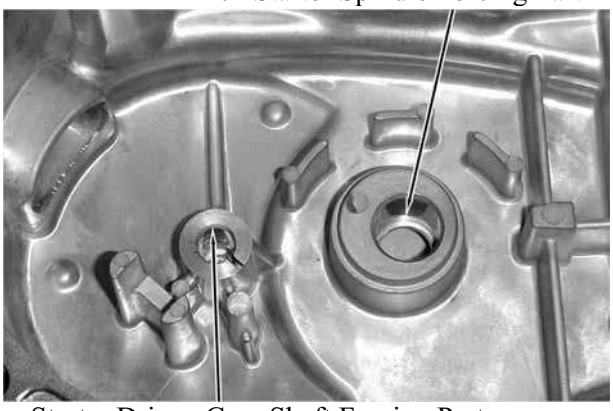
Friction Spring



Starter Driven Gear

Inspect the kick starter spindle and starter driven gear forcing parts for wear or damage.

Kick Starter Spindle Forcing Part

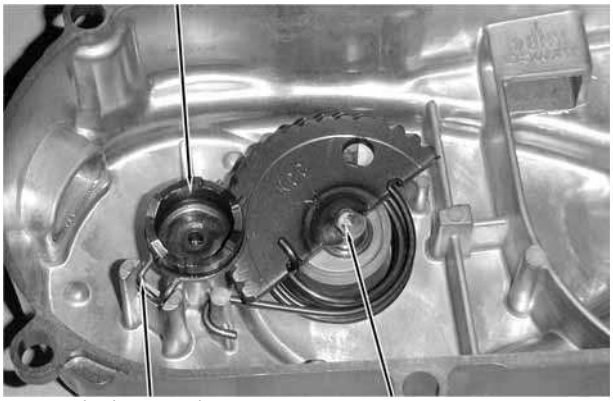


Starter Driven Gear Shaft Forcing Part

INSTALLATION

Install the kick starter spindle bushings and return spring onto the left crankcase cover.

Starting Ratchet

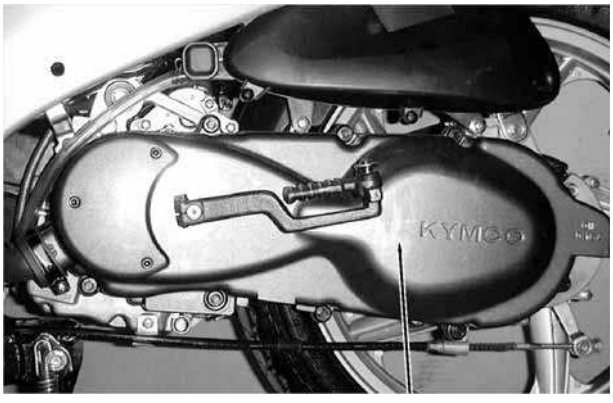


Friction Spring Kick Starter Spindle

* When installing the return spring, use a screw driver to press the inward and outward return spring hooks into their original positions respectively.

Install the starter driven gear and friction spring as the figure shown.

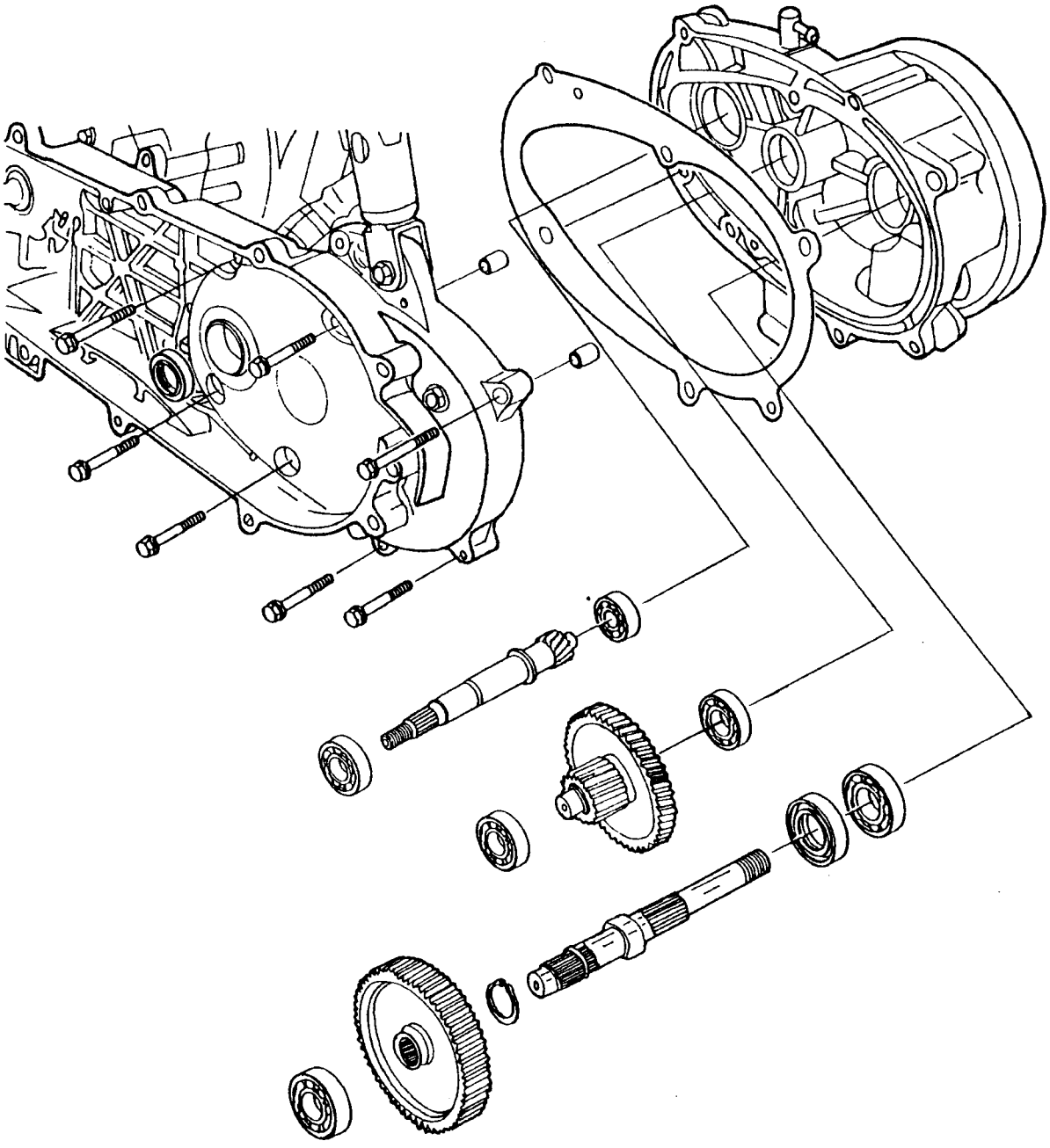
Install the kick lever.
Install the left crankcase cover and tighten the cover bolts diagonally.
Connect the drive belt air tube and tighten the band screw.



Left Crankcase Cover

FINAL REDUCTION

SERVICE INFORMATION 10-2
TROUBLESHOOTING..... 10-2
FINAL REDUCTION DISASSEMBLY 10-3
FINAL REDUCTION INSPECTION 10-3
BEARING REPLACEMENT 10-4
FINAL REDUCTION ASSEMBLY 10-5



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- When replacing the drive shaft, use a special tool to hold the bearing inner race for this operation.

SPECIFICATIONS

Specified Oil: GEAR OIL SAE 90#

Oil Capacity: At change : 0.181 liter

At disassembly : 0.21 liter

TORQUE VALUES

Transmission case cover bolt 1.2kg-m

SPECIAL TOOLS

Driver handle A

Outer driver, 32x35mm

Outer driver, 37x40mm

Outer driver, 42x47mm

Pilot, 15mm

Pilot, 17mm

Pilot, 20mm

Crankcase assembly tool

– Assembly shaft

– Assembly collar

TROUBLESHOOTING

Engine starts but motorcycle won't move

- Damaged transmission
- Seized or burnt transmission

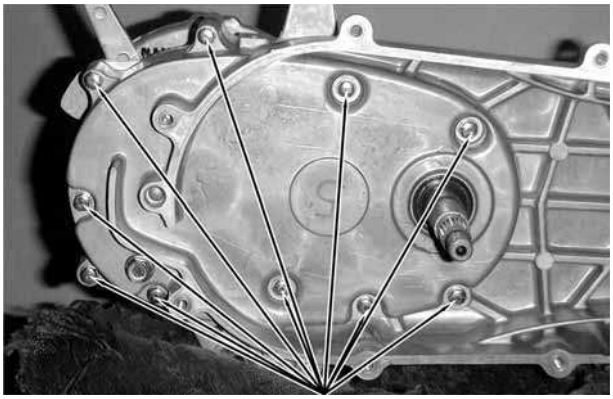
Oil leaks

- Oil level too high
- Worn or damaged oil seal

10. FINAL REDUCTION

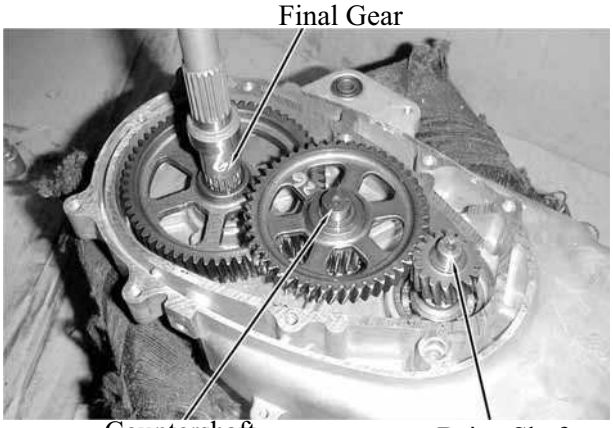
FINAL REDUCTION DISASSEMBLY

Remove the exhaust muffler.
Remove the rear wheel. (⇨13-2)
Remove the rear brake cable. (⇨13-3)
Remove the left crankcase cover. (⇨9-2)
Remove the clutch/driven pulley. (⇨9-8)
Drain the transmission gear oil into a clean container.
Remove the transmission case cover attaching bolts.
Remove the transmission case cover.
Remove the gasket and dowel pins.



Bolts

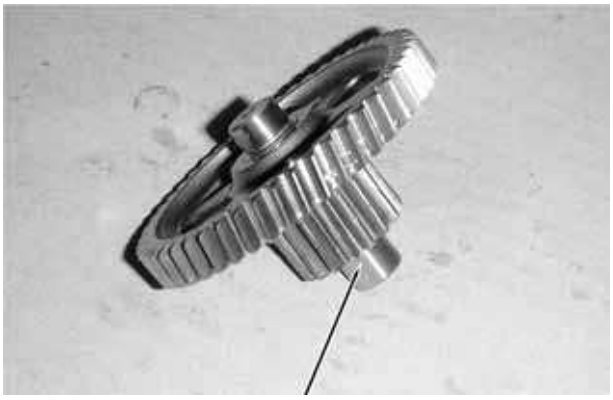
Remove the final gear and countershaft.



Final Gear
Countershaft
Drive Shaft

FINAL REDUCTION INSPECTION

Inspect the countershaft and gear for wear or damage.



Countershaft

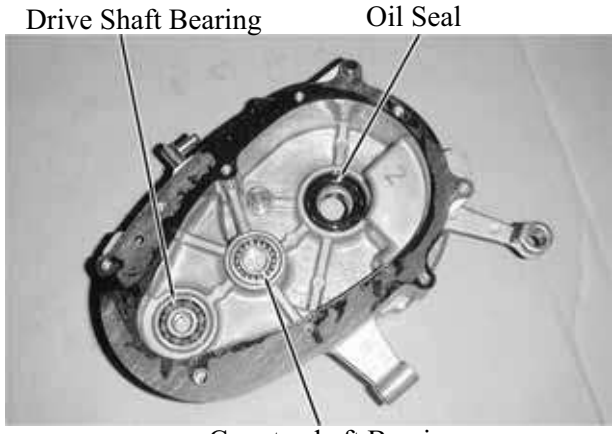
Inspect the final gear and final shaft for wear, damage or seizure.

10. FINAL REDUCTION

Check the left crankcase bearings for excessive play and inspect the oil seal for wear or damage.

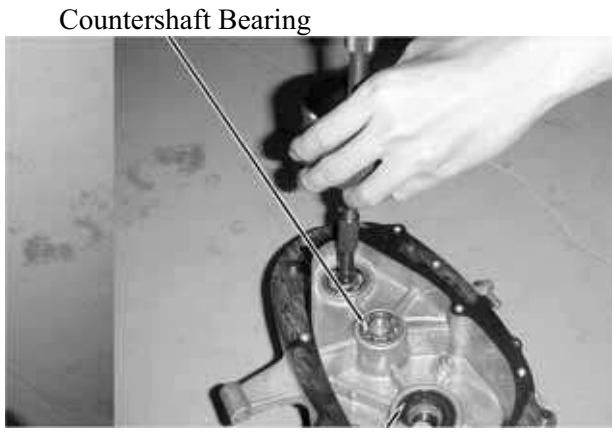
Check the transmission case cover bearings for excessive play and inspect the final shaft bearing oil seal for wear or damage.

* Do not remove the transmission case cover except for necessary part replacement. When replacing the drive shaft, also replace the bearing and oil seal.



BEARING REPLACEMENT (TRANSMISSION CASE COVER)

Remove the transmission case cover bearings using a bearing remover.
Remove the final shaft oil seal.



Drive new bearings into the transmission case cover.

10. FINAL REDUCTION

BEARING REPLACEMENT (LEFT CRANKCASE)

Remove the drive shaft.
Remove the drive shaft oil seal.
Remove the left crankcase bearings using a bearing remover.

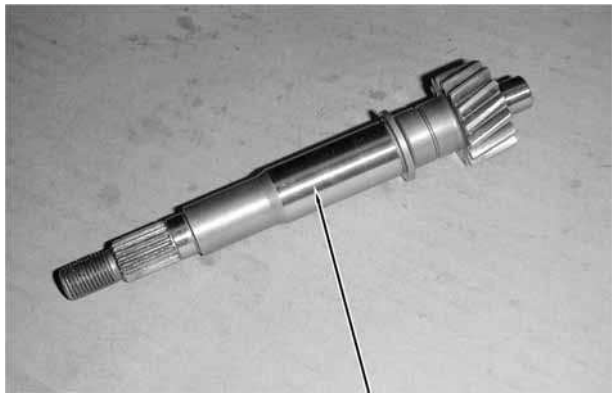
Bearing Remover, 17mm

Drive new bearings into the left crankcase.
Install a new drive shaft oil seal.

Pilot

FINAL REDUCTION ASSEMBLY

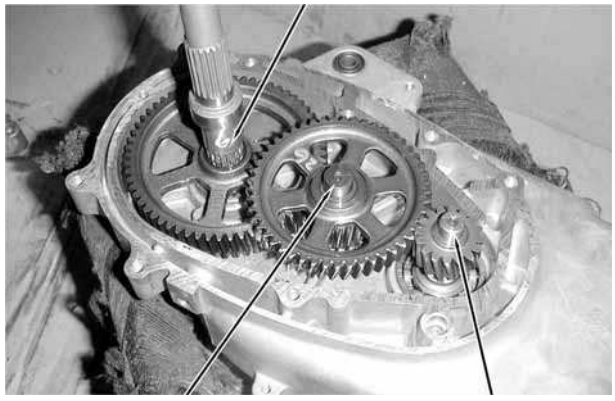
Install the drive shaft into the left crankcase.
Inspect the drive shaft and gear for wear or damage.



Drive Shaft

Final Gear

Install the final gear and final shaft into the left crankcase.
Install the countershaft and gear into the left crankcase.
Install the washer onto the countershaft.
Install the dowel pins and a new gasket.



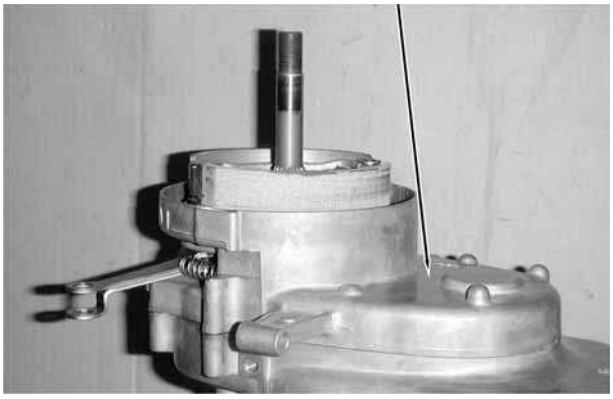
Countershaft

Drive Shaft

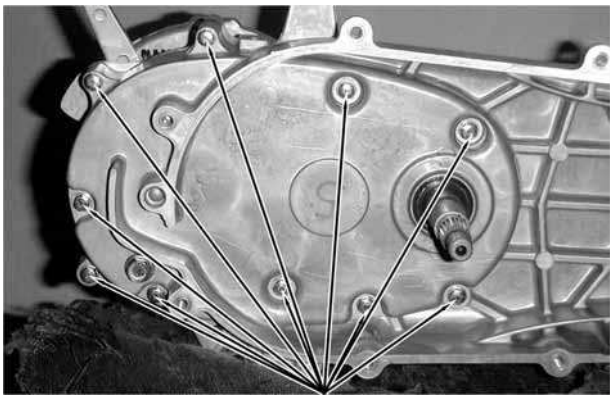
10. FINAL REDUCTION

Install the transmission case cover.

Transmission Case Cover



Install and tighten the transmission case cover bolts.
Install the clutch/driven pulley. (⇨9-13)
Install the rear wheel. (⇨13-3)
Install the rear brake cable. (⇨13-5)



Bolts

Oil Check Bolt Hole/Oil Filler

After installation, fill the transmission case with the specified oil. (⇨3-7)

Drain Bolt

✻
- Place the motorcycle on its main stand on level ground.
- Check the oil sealing washer for wear or damage.

Specified Gear Oil:
KYMCO SIGMA GEAR OIL SAE 90#

Oil Capacity:
At disassembly : 0.21 liter
At change : 0.181 liter

Install and tighten the oil check bolt.

Torque: 1.0～1.5kg-m

Start the engine and check for oil leaks. Check the oil level from the oil check bolt hole and add the specified oil to the proper level if the oil level is low.

CRANKCASE/CRANKSHAFT

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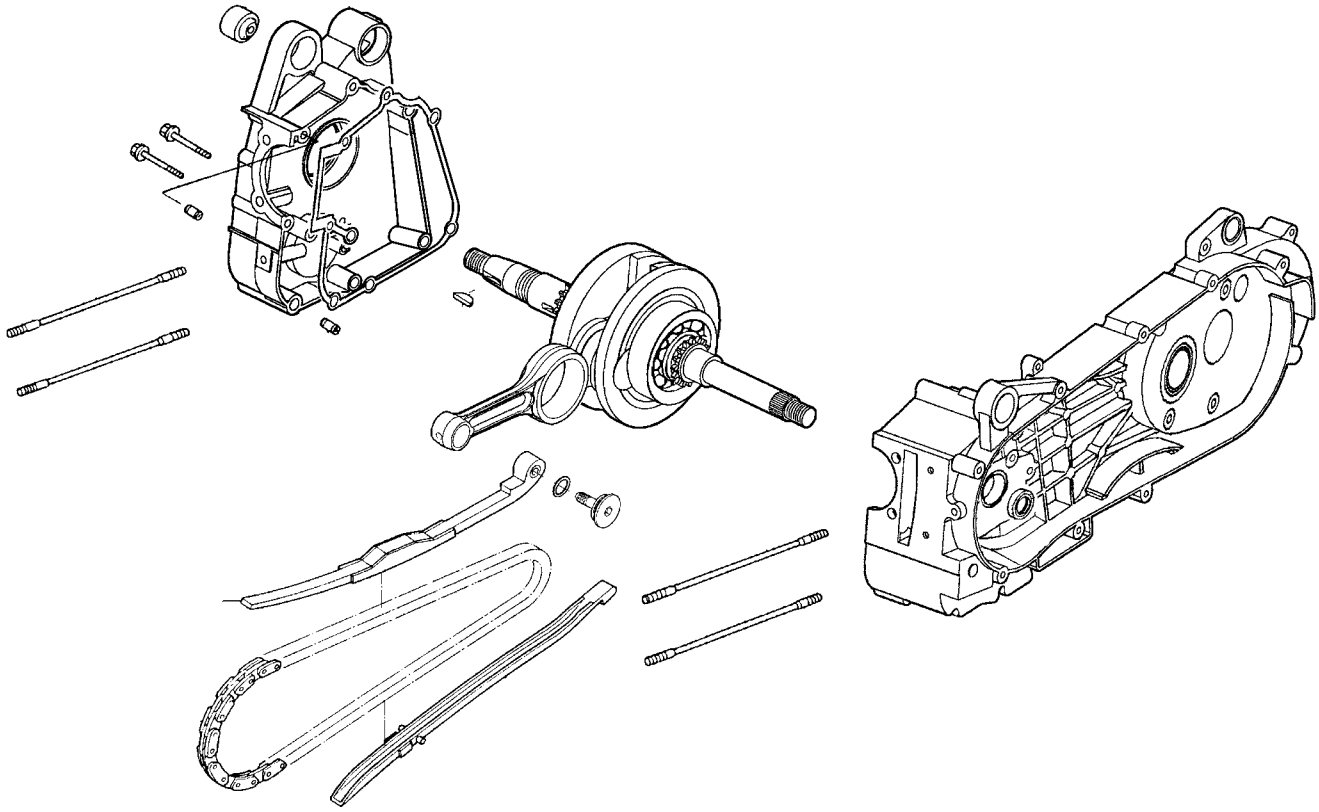
TROUBLESHOOTING..... 11-2
CRANKCASE SEPARATION 11-3
CRANKSHAFT INSPECTION..... 11-4
CRANKCASE ASSEMBLY..... 11-4



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section covers crankcase separation to service the crankshaft. The engine must be removed for this operation.
- The following parts must be removed before separating the crankcase.
  - –Cylinder head (⇨Section 7)
  - –Cylinder/piston (⇨Section 8)
  - –Drive and driven pulleys (⇨Section 9)
  - –A.C. generator (⇨Section 14)
  - –Carburetor/air cleaner (⇨Section 4)
  - –Rear wheel/rear shock absorber (⇨Section 13)
  - –Starter motor (⇨Section 16)
  - –Oil pump (⇨Section 4)

SPECIFICATIONS

	Item	Standard (mm)	Service Limit (mm)
Crankshaft	Connecting rod big end side clearance	0.10～0.35	0.55
	Connecting rod big end radial clearance	0～0.008	0.05
	Runout	—	0.10

TORQUE VALUES

Crankcase bolt	0.9kg-m
Cam chain cover bolt	0.9kg-m

TROUBLESHOOTING

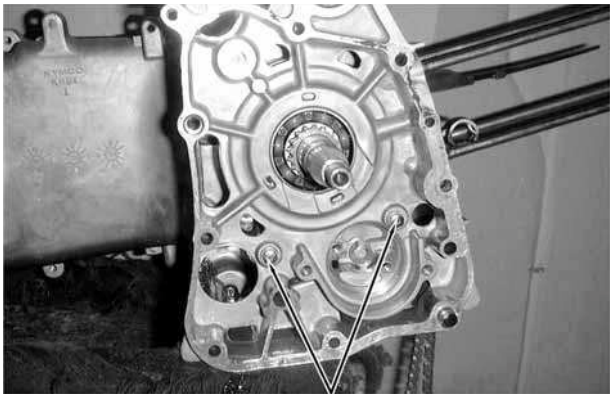
Excessive engine noise

- Excessive bearing play
- Excessive crankpin bearing play

CRANKCASE SEPARATION

Remove the two crankcase attaching bolts. Separate the left and right crankcase halves.

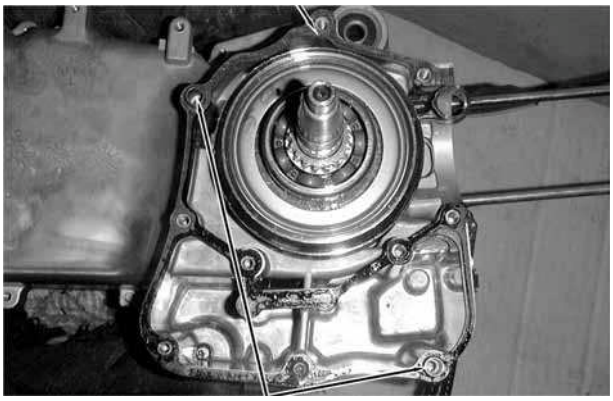
* Do not damage the crankcase gasket surface.



Crankcase Bolts

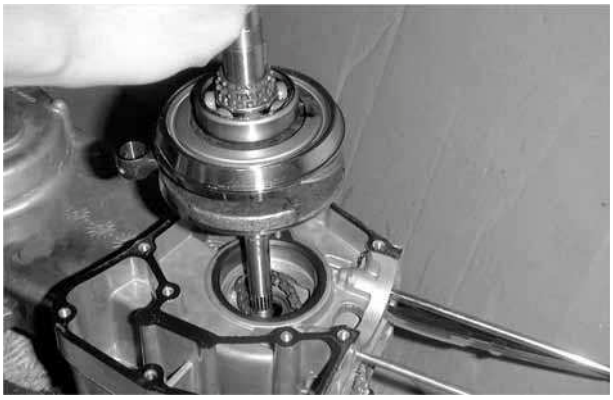
Gasket

Remove the gasket and dowel pins.



Dowel Pins

Remove the crankshaft from the left crankcase.



Clean off all gasket material from the crankcase mating surfaces.

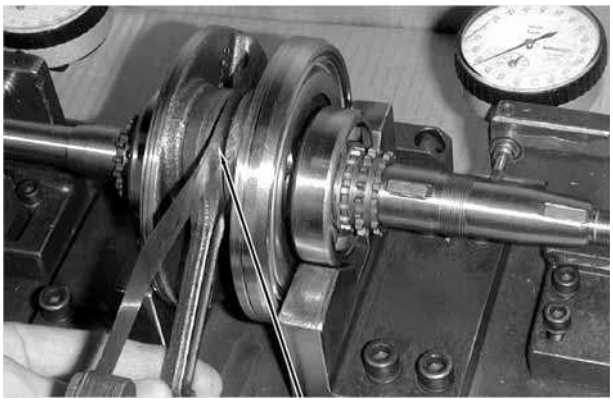
* Avoid damaging the crankcase mating surfaces.

Remove the oil seal from the right crankcase.
Check the oil seal lip for wear or deterioration.
The installation sequence is the reverse of removal.

CRANKSHAFT INSPECTION

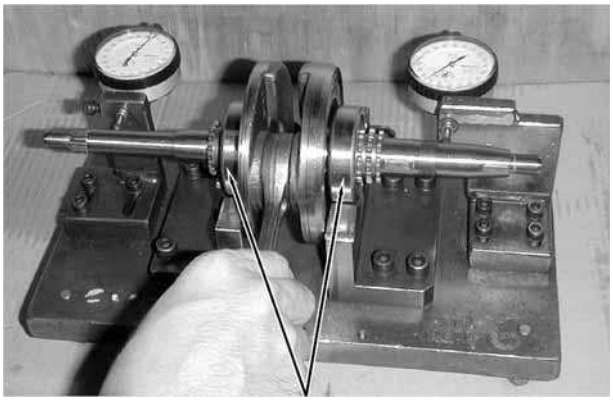
Measure the connecting rod big end side clearance.

Service Limit: 0.55mm replace if over



Connecting Rod Big End

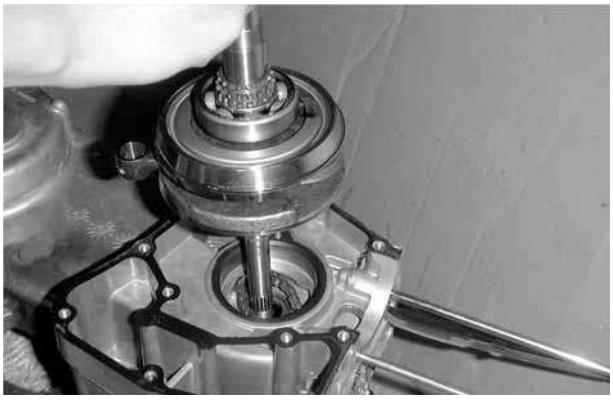
Turn the crankshaft bearings and check for excessive play.
If they do not turn smoothly, quietly or if they fit loosely in the crankshaft, replace the crankshaft as a set.



Crankshaft Bearings

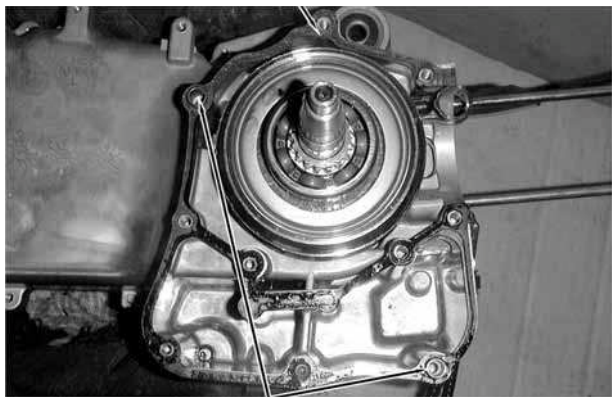
CRANKCASE ASSEMBLY

Install the crankshaft into the left crankcase.



Install the dowel pins and a new gasket onto the left crankcase.

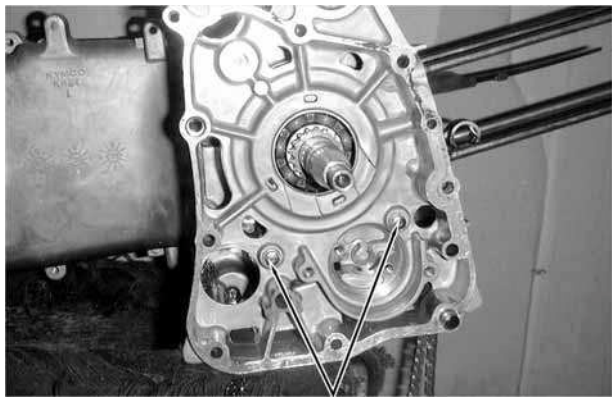
Gasket



Dowel Pins

* Place the right crankcase over the crankshaft and onto the left crankcase.

Tighten the two crankcase attaching bolts.
Torque: 0.9kg-m



Crankcase Bolts

FRONT WHEEL/FRONT BRAKE/FRONT SUSPENSION

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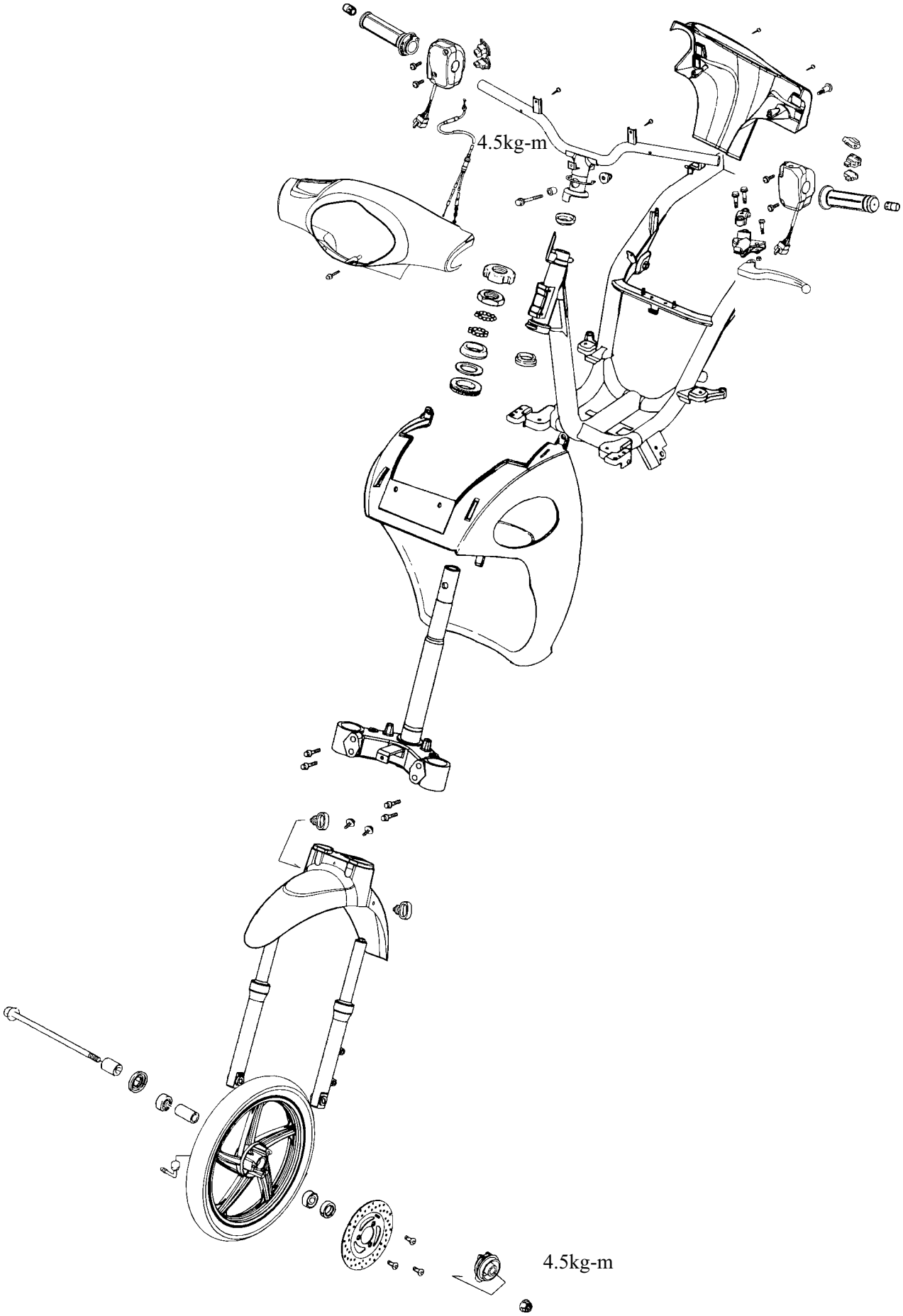
HYDRAULIC BRAKE DRAWING 12-7
HYDRAULIC BRAKE 12-8
FRONT SHOCK ABSORBER 12-13
STEERING HANDLEBAR 12-14
STEERING STEM 12-15


4.5kg-m
4.5kg-m

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Remove the motorcycle frame covers before removing the front wheel. Jack the motorcycle front wheel off the ground and be careful to prevent the motorcycle from falling down.
- During servicing, keep oil or grease off the brake drum and brake linings.
- Contaminated brake disk or brake pads reduce stopping power. Clean the contaminated brake disk with high-performance brake degreaser and replace the brake pads.
- Do not use brake fluid for cleaning.
- Bleed air from the brake system if the brake system is removed or the brake is soft.
- Do not allow any foreign matters to enter the brake system when filling it with brake fluid.
- Brake fluid will damage painted surfaces and plastic parts. When servicing the brake system, use shop towels to cover and protect rubber, plastic parts and coated surfaces. Wipe off any spilled brake fluid with a clean shop towel.
- Inspect the brake system before riding.

SPECIFICATIONS

Item		Standard (mm)	Service Limit (mm)
Axle shaft runout		—	0.2
Front wheel rim runout	Radial	—	2.0
	Axial	—	2.0
Front brake lining thickness		5.5	2.75
Front shock absorber spring free length		260	252
Brake disk thickness		3.2～3.5	3.0
Brake disk runout		—	0.25
Brake master cylinder I.D.		12.700～12.743	12.75
Brake master cylinder piston O.D.		12.657～12.684	12.64
Brake caliper piston O.D.		33.910～33.934	33.901
Brake caliper cylinder I.D.		33.90～33.990	34.01

TORQUE VALUES

Steering stem bolt	4.0～5.0kg-m	Brake caliper bleed valve	0.6kg-m
Steering stem lock nut	8.0～12.0kg-m	Brake fluid tube bolt	2.5～3.5kg-m
Steering top cone race	0.5～1.3kg-m	Brake pad pin bolt	1.5～2.0kg-m
Front shock absorber bolt	2.0～2.5kg-m	Brake caliper bolt	2.9～3.5kg-m
Front axle nut	6.0kg-m	Brake master cylinder bolt	1.0～1.4kg-m

SPECIAL TOOLS

Lock nut wrench
Outer driver, 28x30mm
Ball race remover
Pliers (close)
Bearing remover head, 10mm
Driver handle A
Pilot, 10mm
Outer driver, 37x40mm
Bearing remover

TROUBLESHOOTING

Hard steering (heavy)

- Excessively tightened steering stem top cone race
- Broken steering balls
- Insufficient tire pressure

Steers to one side or does not track straight

- Uneven front shock absorbers
- Bent front fork
- Bent front axle or uneven tire

Poor brake performance

- Incorrectly adjusted brake
- Worn brake linings
- Contaminated brake lining surface
- Worn brake shoes at cam contacting area
- Worn brake drum
- Poorly connected brake arm

Poor brake performance (Disk Brake)

- Air in brake system
- Deteriorated brake fluid
- Contaminated brake pads and brake disk
- Worn brake pads
- Worn brake master cylinder piston oil seal
- Clogged brake fluid line
- Deformed brake disk
- Unevenly worn brake caliper

Front wheel wobbling

- Bent rim
- Excessive wheel bearing play
- Bent spoke plate
- Faulty tire
- Improperly tightened axle nut

Soft front shock absorber

- Weak shock springs
- Insufficient damper oil

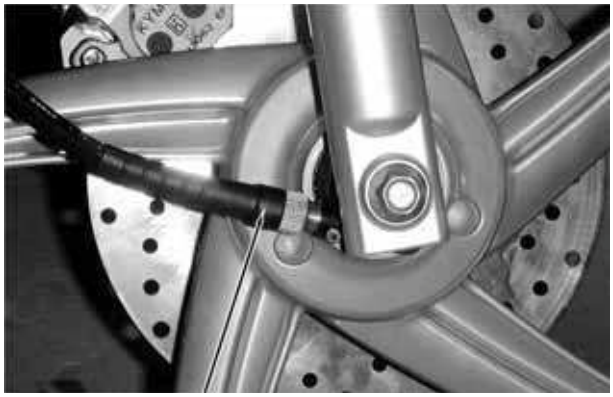
Front shock absorber noise

- Slider bending
- Loose fork fasteners
- Lack of lubrication

FRONT WHEEL

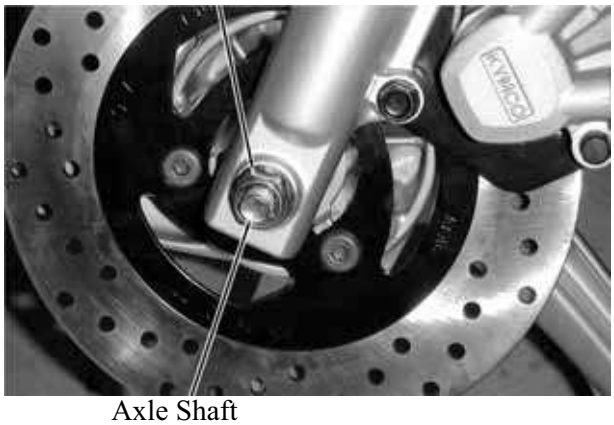
REMOVAL

Jack the motorcycle front wheel off the ground.
Disconnect the speedometer cable.


Speedometer Cable

Axle Nut

Remove the front axle nut and pull out the axle.
Remove the front wheel.
Remove the front brake panel.

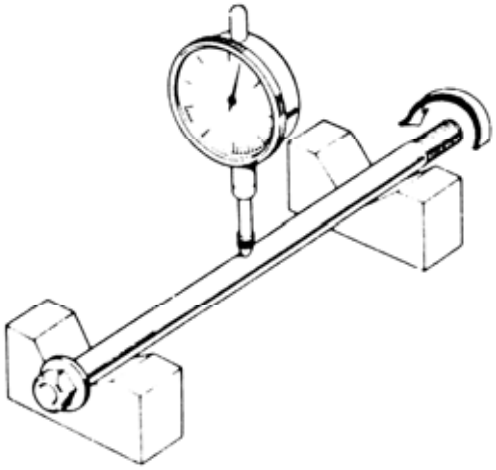

Axle Shaft

INSPECTION

AXLE RUNOUT

Set the axle in V blocks and measure the runout using a dial gauge.
The actual runout is 1/2 of the total indicator reading.

Service Limit: 0.2mm replace if over



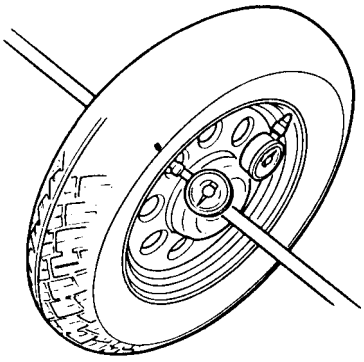
WHEEL RIM

Check the wheel rim runout.

Service Limits:

Radial: 2.0mm replace if over

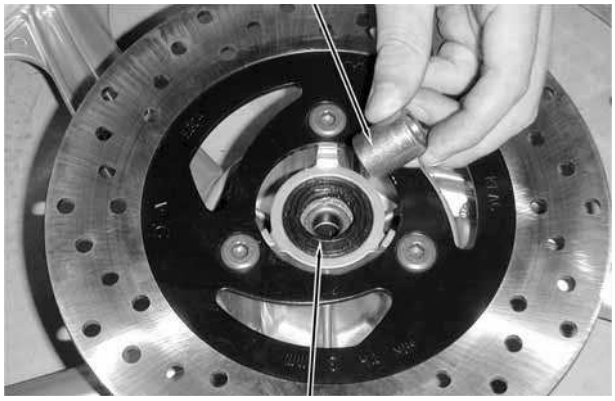
Axial: 2.0mm replace if over



FRONT WHEEL BEARING

Remove the side collar and dust seal.

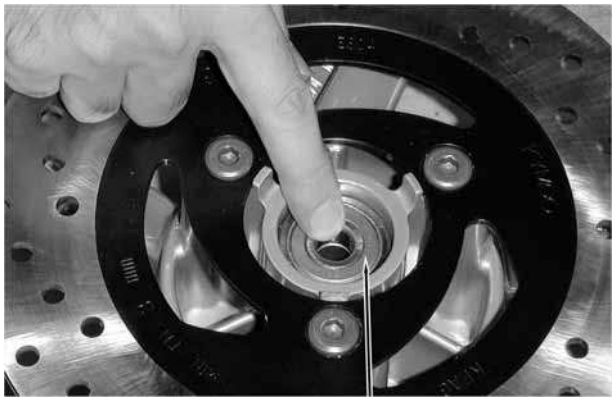
Side Collar



Dust Seal

Turn the inner race of each bearing with your finger to see if they turn smoothly and quietly. Also check if the outer race fits tightly in the hub.

Replace the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the hub.



Wheel Bearing

BEARING REPLACEMENT

Remove the front wheel bearings and distance collar.

Special

Bearing Remover

Bearing Remover Head, 12mm

Bearing Remover

Pack all bearing cavities with grease.
Drive in the left bearing.
Install the distance collar.
Drive in the right bearing.

* • Do not allow the bearings to tilt while driving them in.
• Drive in the bearing squarely with the sealed end facing out.

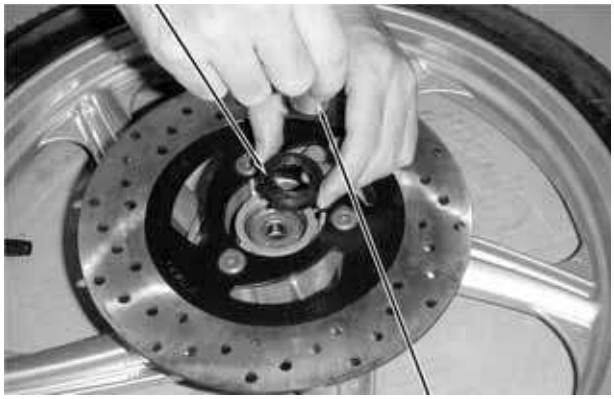
Special

Driver handle A

Driver Handle A

Apply grease to a new dust seal lip and install the dust seal.
Install the side collar.

Dust Seal



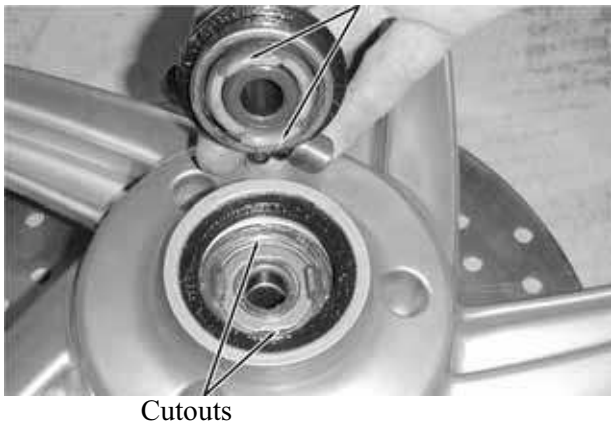
Side Collar

INSTALLATION

Apply grease to the brake panel dust seal lip.
Apply grease to the speedometer gear engaging and sliding parts.
Install the brake panel by aligning the speedometer retaining pawls with the hub cutouts.

* If not aligned, the retaining pawl will be deformed when the axle nut is tightened.
After installing the axle, turn the wheel to make sure that the speedometer drive shaft rotates freely.

Pawls

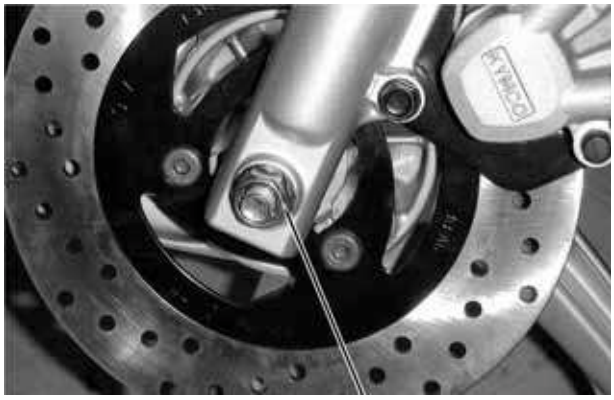


Cutouts

Apply a thin coat of grease to the axle shaft.
Install the front wheel by aligning the brake panel groove with the front fork tab.
Insert the axle shaft.
Install and tighten the axle nut.

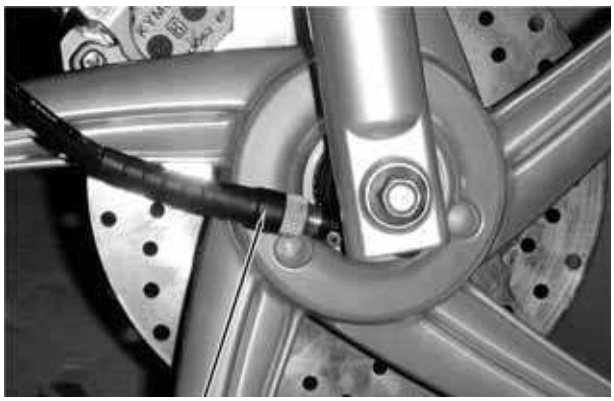
Torque: 6.0kg-m

Install the front brake cable and rotate the front tire to check the speedmeter if be performed.



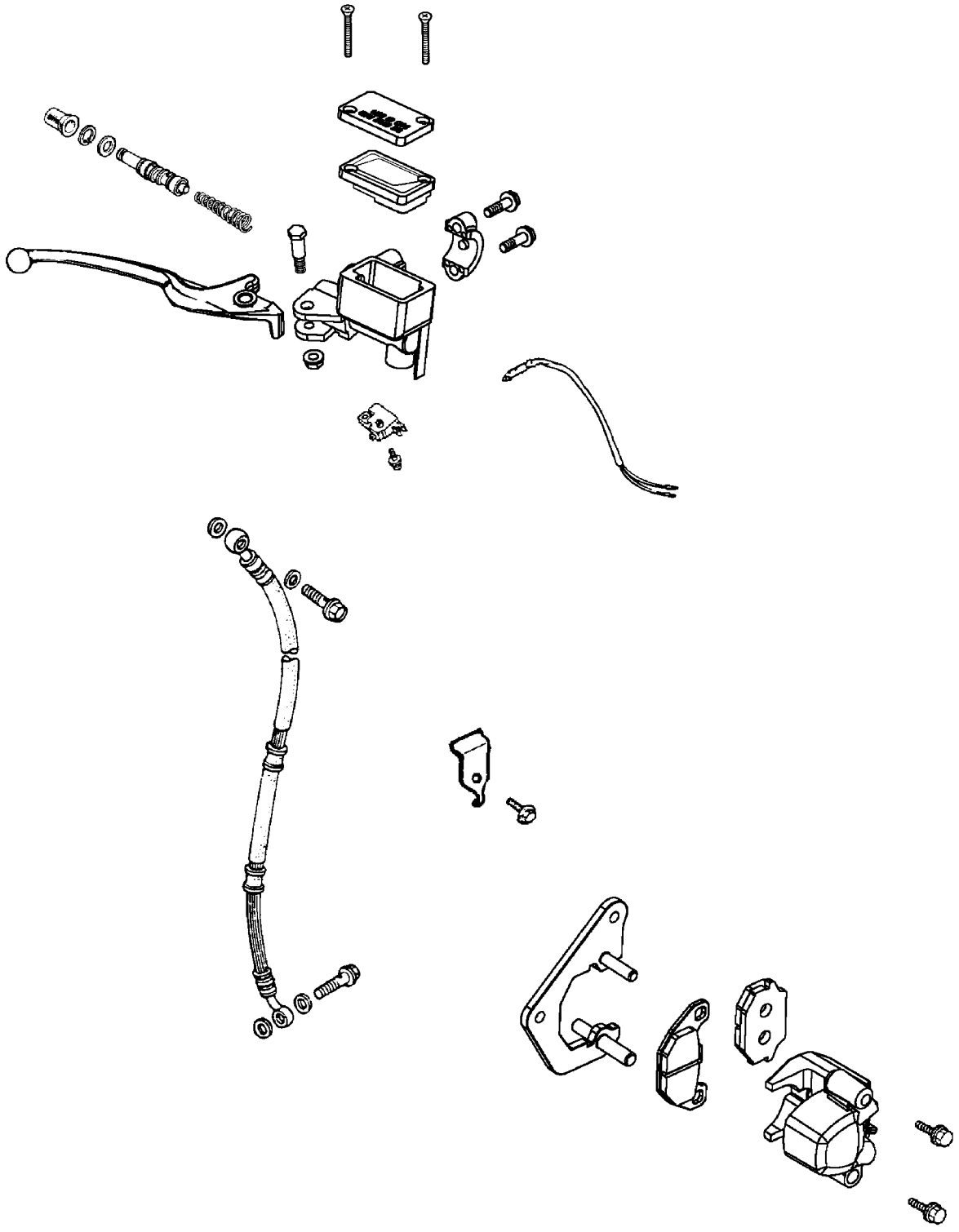
Axle Nut

Connect the speedometer cable.



Speedometer Cable

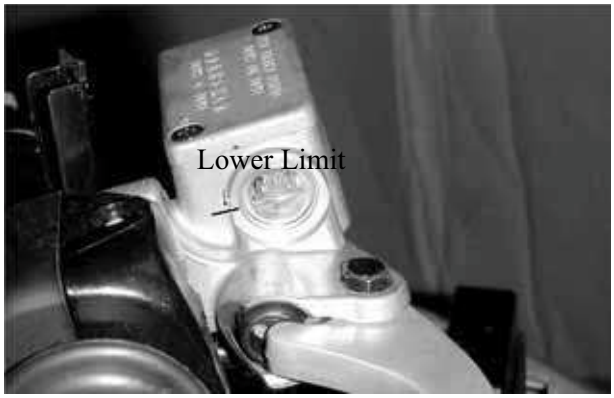
HYDRAULIC BRAKE DRAWING



HYDRAULIC BRAKE (FRONT BRAKE)

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Check the brake fluid level on level ground.



* When operating the brake lever, the brake reservoir cap must be tightened securely to avoid splash of brake fluid.
* When servicing the brake system, use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.

BRAKE FLUID BLEEDING

In order to avoid spilling brake fluid, connect a transparent hose to the bleed valve.

Warning

Spilled brake fluid on brake pads or brake disk reduces stopping power. Clean the brake pads and brake disk with a high-performance brake degreaser.

Hose

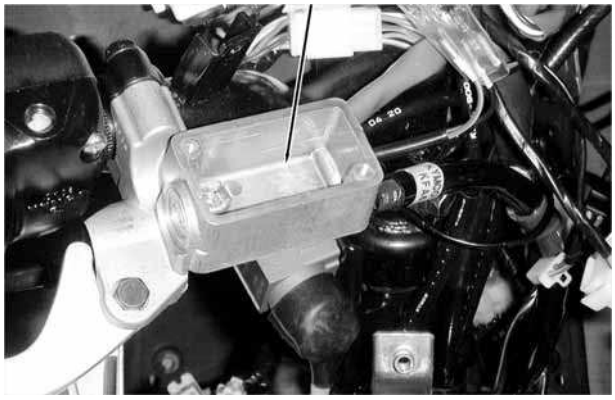
Front Brake Caliper

Fully apply the brake lever and then loosen the brake caliper bleed valve to drain the brake fluid until there is no air bubbles in the brake fluid. Then, tighten the bleed valve. Repeat these steps until the brake system is free of air.

BRAKE FLUID REFILLING

Add DOT-3 brake fluid to the brake reservoir.

Reservoir

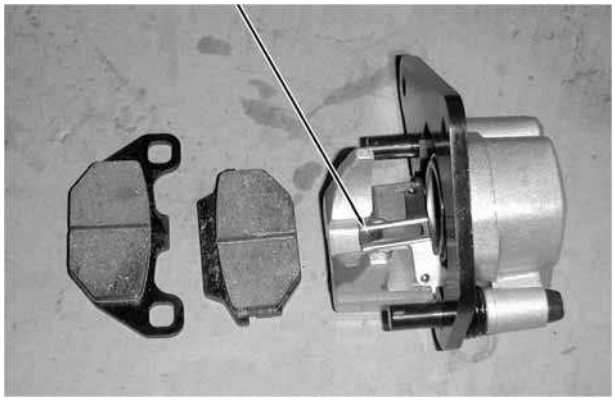


* When bleeding, be careful not to allow air in the brake reservoir flowing into the brake system.
* Never use dirty or unspecified brake fluid or mix different brake fluids because it will damage the brake system.

Make sure to bleed air from the brake system.

BRAKE PAD/DISK REPLACEMENT

Fixed-Reed



* The brake pads must be replaced as a set to ensure the balance of the brake disk.

Remove the two bolts attaching the brake caliper.
Remove the brake caliper.
Compress the brake caliper seat, and press down the fixed-reed to take out the brake pads.

Install the brake pads in the reverse order of removal.
Tighten the brake pad pin bolt.
Torque: 1.5～2.0kg-m

* Keep grease or oil off the brake pads to avoid brake failure.

Fixed-Reed

Brake Pads

BRAKE DISK

Measure the brake disk thickness.
Service Limit: 3.0mm
Measure the brake disk runout.
Service Limit: 0.3mm

Master Cylinder

BRAKE MASTER CYLINDER

REMOVAL

First drain the brake fluid from the hydraulic brake system.

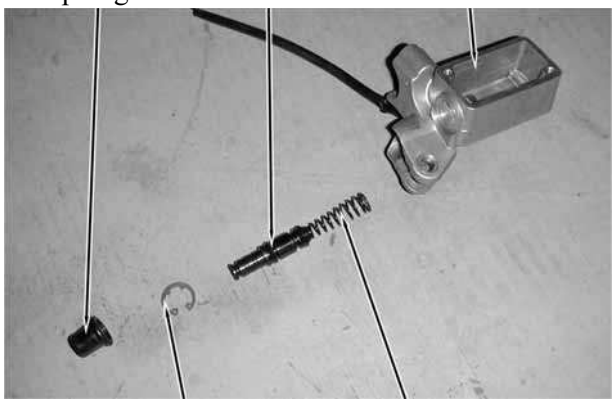
* • When servicing the brake system, use shop towels to cover rubber and plastic parts and coated surfaces to avoid being contaminated by brake fluid.
  • When removing the brake fluid tube bolt, be sure to plug the tube end to avoid brake fluid leakage.

DISASSEMBLY

Remove the piston rubber cover and snap ring from the brake master cylinder.

Snap Ring

Remove the main piston and spring from the brake master cylinder.
Clean the inside of the master cylinder and brake reservoir with brake fluid.



INSPECTION

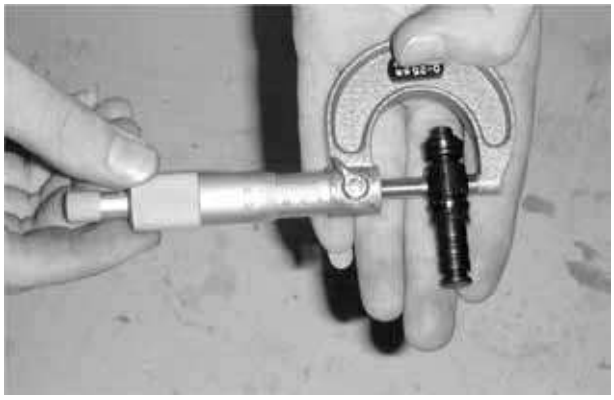
Measure the brake master cylinder I.D.
Inspect the master cylinder for scratches or cracks.

Service Limit: 12.75mm

Measure the brake master cylinder piston O.D.

Service Limit: 12.75mm

Before assembly, inspect the lst and 2nd rubber cups for wear or damage.



ASSEMBLY

Before assembly, apply brake fluid to all removed parts.
Install the spring together with the 1st rubber cup.

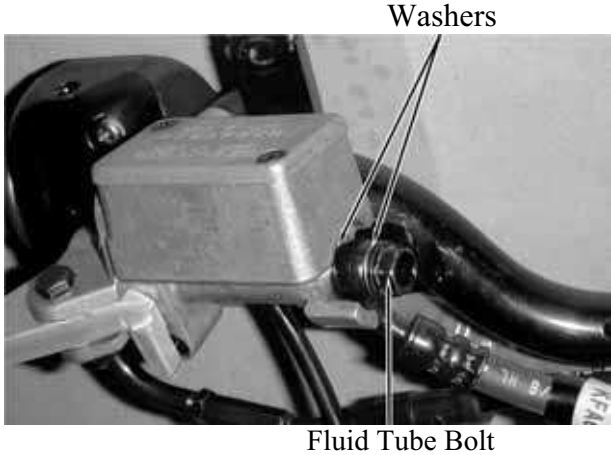
* • During assembly, the main piston and spring must be installed as a unit without exchange.
  • When assembling the piston, soak the cups in brake fluid for a while.
  • Install the cups with the cup lips facing the correct direction.

Install the main piston, spring and snap ring.
Install the diaphragm.
Install the brake lever.

Place the brake master cylinder on the handlebar and install the holder with the "up" mark facing up. Also align the punch mark with the holder joint seam.
First tighten the upper bolt and then tighten the lower bolt.

Torque: 1.0～1.4kg-m

Install the brake fluid tube with the attaching bolt and two sealing washers.
Install the handlebar covers.
Connect the front and rear stop switch wire connectors.
Fill the brake reservoir with recommended brake fluid to the upper limit and bleed air according to the method stated in page 12-8.

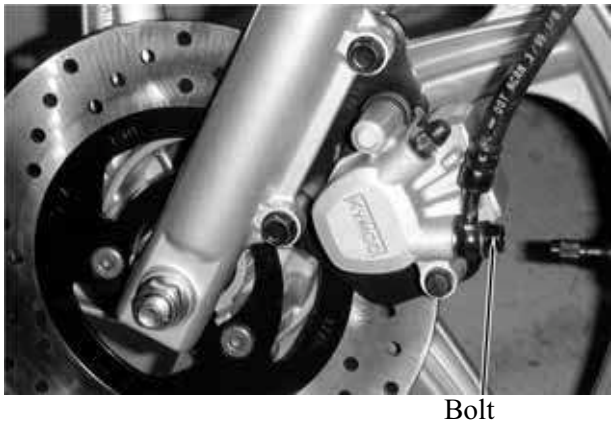


BRAKE CALIPER (FRONT)

REMOVAL

Remove the brake caliper and brake pad springs. (⇨12-9)
Place a clean container under the brake caliper and disconnect the brake fluid pipe from the caliper.

* Do not spill brake fluid on any coated surfaces.



DISASSEMBLY

Remove the brake caliper seat from the brake caliper.

Remove the pistons from the brake caliper.
If necessary, use compressed air to squeeze out the pistons through the brake fluid inlet opening and place a shop towel under the caliper to avoid contamination caused by the removed pistons.
Check each piston cylinder for scratches or wear and replace if necessary.

Compressed Air

Push the piston oil seals outward to remove them.
Clean each oil seal groove with brake fluid.

* Be careful not to damage the piston surface.

Piston Oil Seals

Check each piston for scratches or wear.
Measure each piston O.D. with a micrometer gauge.
Service Limit: 33.90mm

Check each caliper cylinder for scratches or wear and measure the cylinder bore.
Service Limit: 33.45mm

ASSEMBLY

Clean all removed parts.
Apply silicon grease to the pistons and oil seals. Lubricate the brake caliper cylinder inside wall with brake fluid.
Install the brake caliper piston with grooved side facing out.

* Install the piston with its outer end protruding 3～5mm beyond the brake caliper cylinder.

Wipe off excessive brake fluid with a clean shop towel. Apply silicon grease to the brake caliper seat pin and caliper inside.
Install the brake caliper seat.

INSTALLATION

Install the brake caliper and tighten the two bolts.

Torque: 2.9～3.5kg-m

Connect the brake fluid tube to the brake caliper and tighten the fluid tube bolt.

Torque: 2.5～3.5kg-m

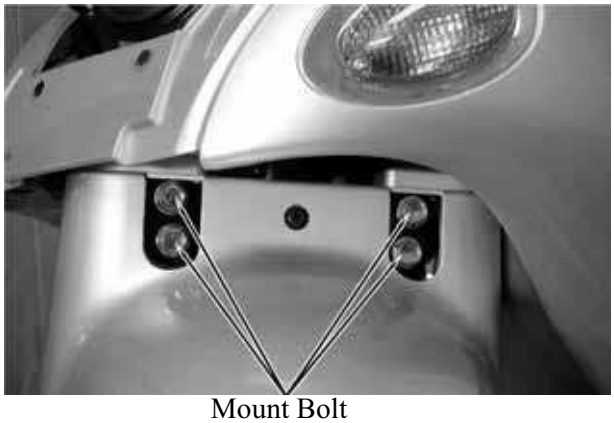
Fill the brake reservoir with recommended brake fluid and bleed air from the brake system.

Fluid Tube Bolt

FRONT SHOCK ABSORBER

REMOVAL

Remove the front cover. (⇨2)
Remove the front wheel.
Remove the front shock absorber upper mount bolts.
Loosen the lower mount bolts to remove the front shock absorbers.

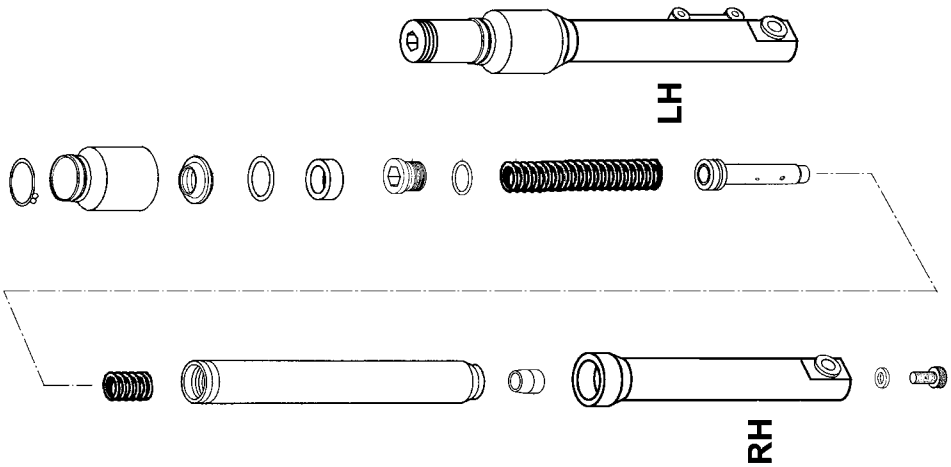


Mount Bolt

INSPECTION

Inspect the following items and replace if necessary.

- Front shock absorber tube bending or damage.
- Weak front shock absorber spring.
- Damper and damper rod bending.
- Oil seal damage or wear.



Mount Boot

INSTALLATION

Install the front shock absorbers onto the steering stem.
Install and tighten the front shock absorber upper mount bolts.
Tighten the lower mount bolts.

* Align the upper mount bolt hole with the groove on the front fork.
  Front shock absorbers are installed at the same altitude.

Install the front wheel.

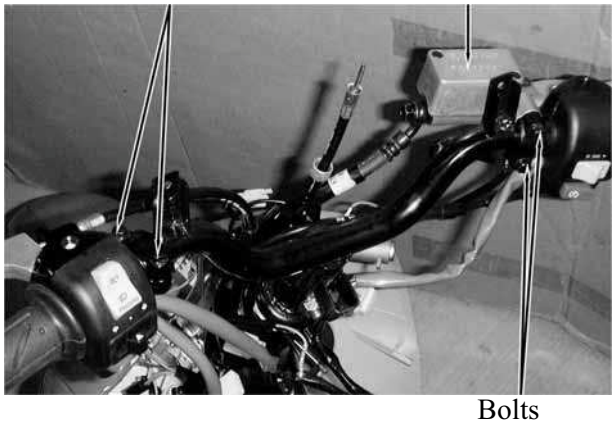
Washer/Bolt

STEERING HANDLEBAR

REMOVAL

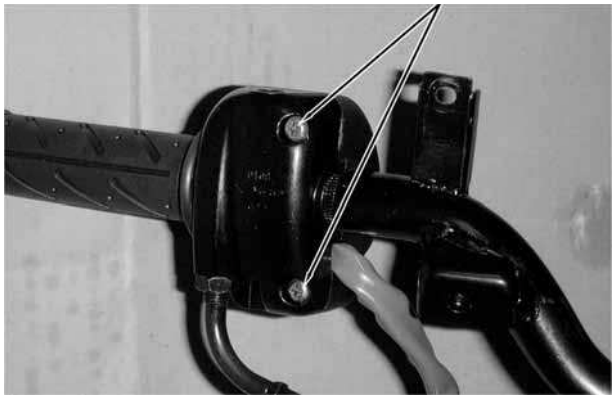
Remove the handlebar covers. (⇨2)
Remove the rear brake lever holder bolt to remove the holder.
Remove the front brake master cylinder holder bolts to remove the brake master cylinder.

Bolts Brake Master Cylinder

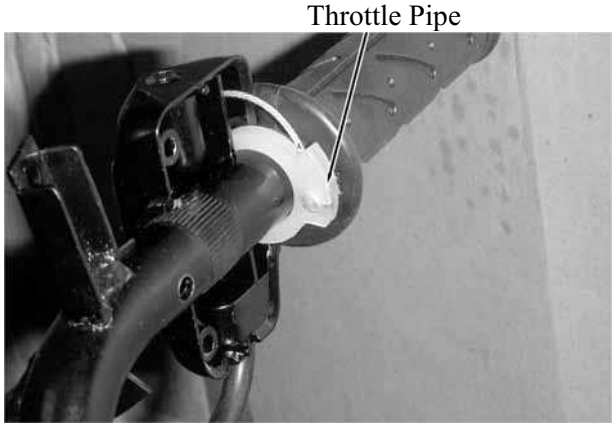


Bolts

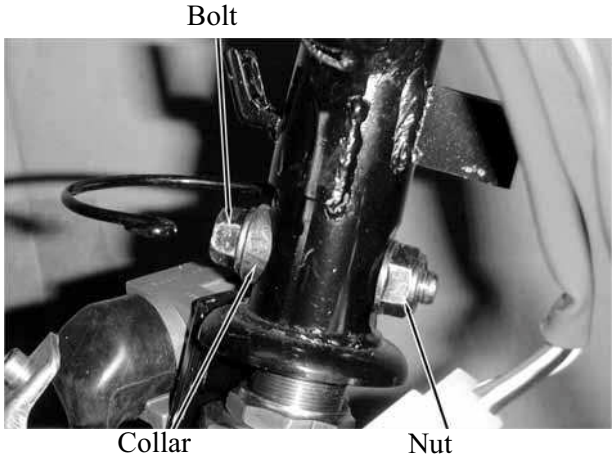
Remove the throttle seat screw.



Remove the throttle seat from the handlebar and disconnect the throttle cable from the throttle pipe.
Remove the throttle pipe from the handlebar.



Remove the steering stem lock bolt, collar, nut and the handlebar.



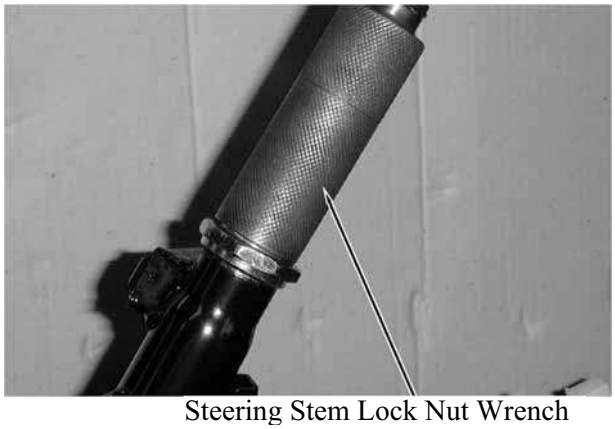
STEERING STEM

REMOVAL

Remove the steering stem lock nut.

Special

Steering Stem Lock Nut Wrench
Lock Nut wrench



Remove the top cone race.

* • Be careful not to lose the steel balls (26 on top race and 19 on bottom race).
• Clean the openings of frame covers with clean shop towels.

Remove the front fork.

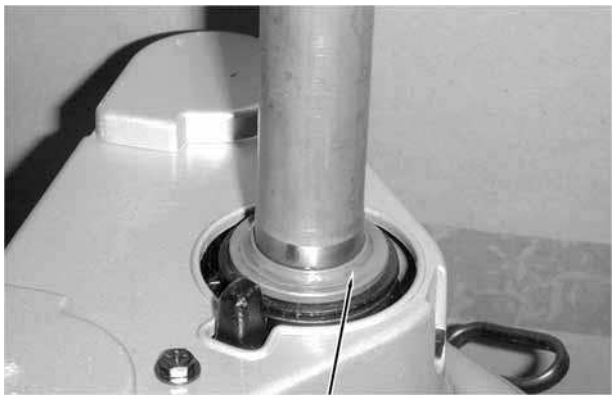
Top Cone Race

BOTTOM CONE RACE REPLACEMENT

Remove the bottom cone race using a chisel.

* Be careful not to damage the steering stem and front fork.

Drive a new bottom cone race into place with a proper driver.

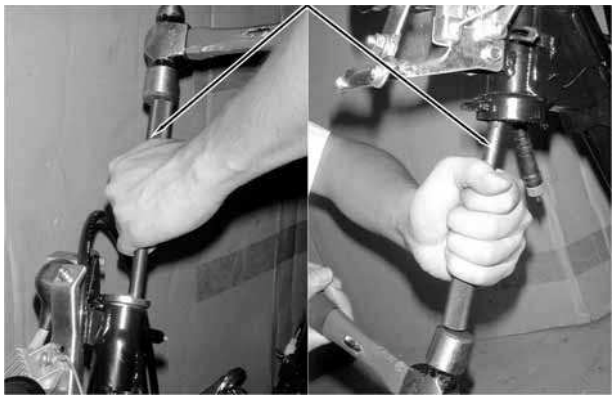


Bottom Cone Race

Ball Race Remover

BALL RACE REPLACEMENT

Drive out the top and bottom ball races.

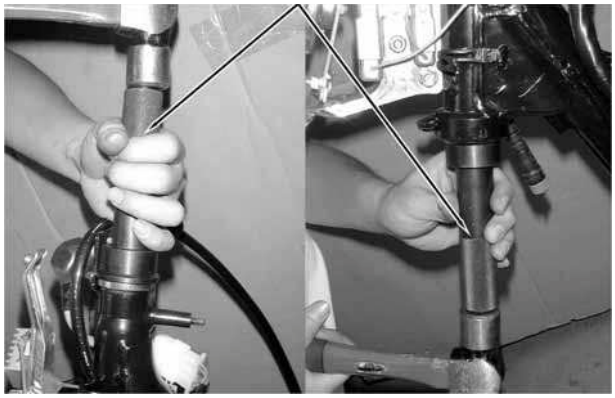


Outer Driver, 37x40mm

Drive new top and bottom ball races into the steering head using the outer driver.

Special

Outer Driver 37x40mm



INSTALLATION

Install the front mold and the front fender.

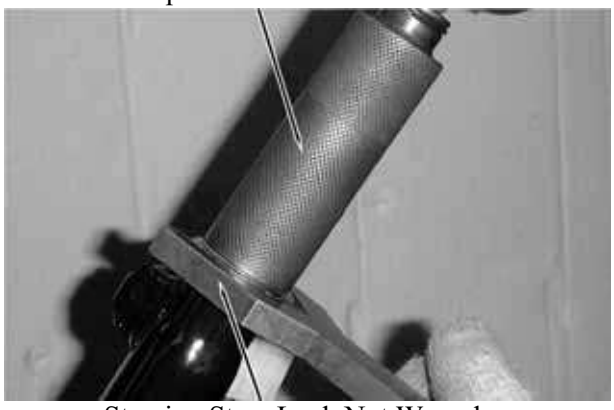
Apply grease to the top and bottom ball races and install 26 steel balls on the top ball race and 19 steel balls on the bottom ball race.
Apply grease to the ball races and install the front fork.
Apply grease to the top cone race and install it.
Tighten the top cone race and then turn the steering stem right and left several times to make steel balls contact each other closely.

* Check that the steering stem rotates freely without vertical play.

Install the steering stem lock nut and tighten it while holding the top cone race.

Torque: 8.0～12.0kg-m

Install the front wheel. (⇨12-15)

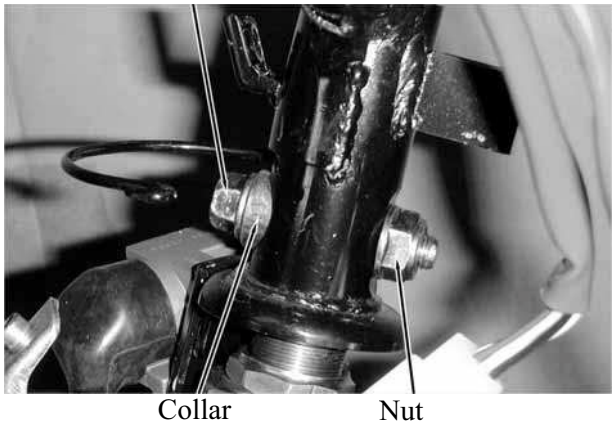


HANDLEBAR INSTALLATION

Install the handlebar onto the steering stem tube and then install and tighten the bolt.

Torque: 4.5kg-m

Install the front wheel. (⇨12-6)
Install the brake levers. (⇨12-15)
Install the handlebar covers.



REAR WHEEL/REAR BRAKE/ REAR SUSPENSION

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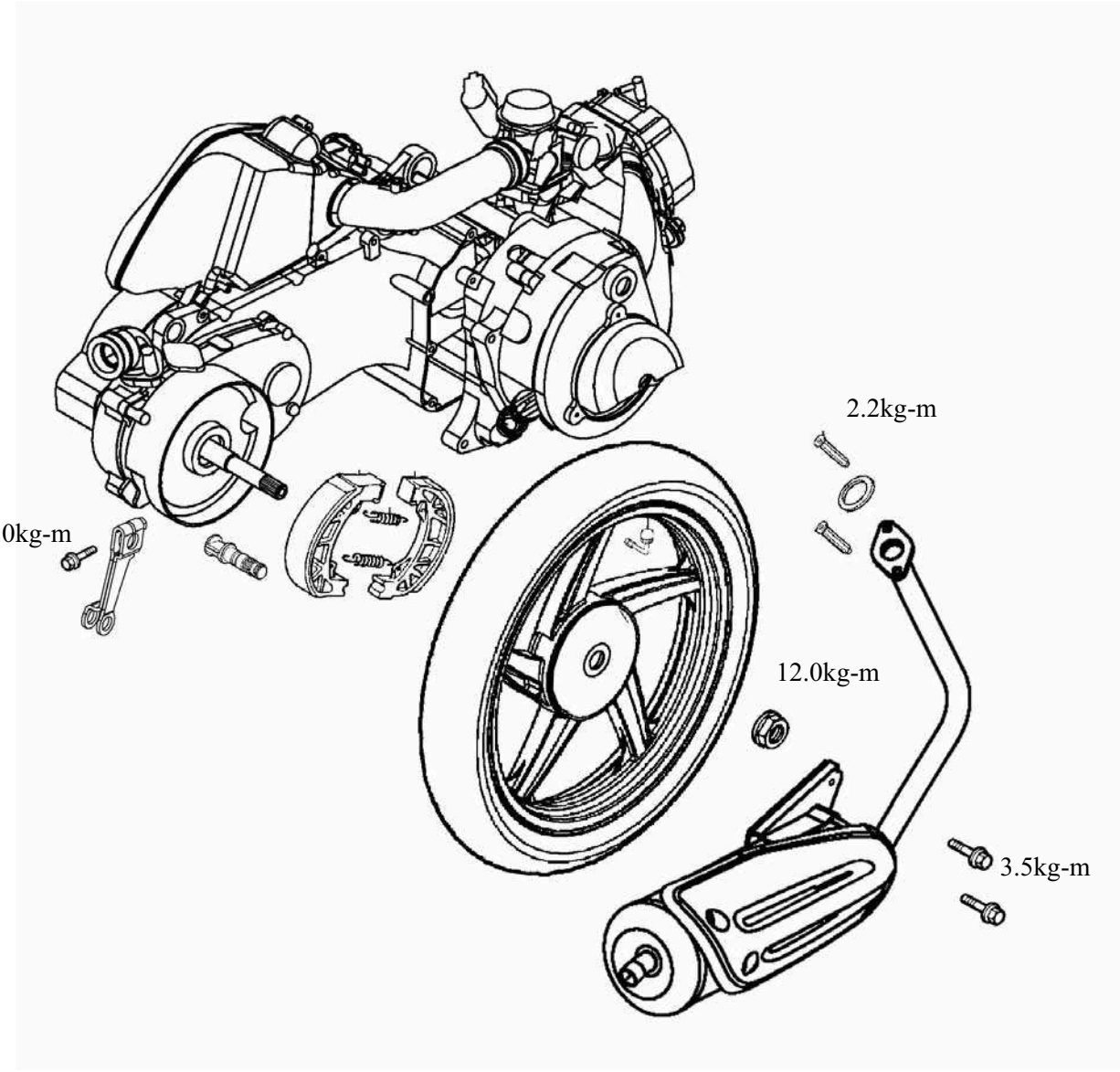
TROUBLESHOOTING 13-2
REAR WHEEL 13-3
REAR BRAKE 13-4
REAR SHOCK ABSORBER 13-5
ADJUSTABLE REAR CUSHION 13-6


2.2kg-m
1.0kg-m
12.0kg-m
3.5kg-m

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- During servicing, keep oil or grease off the brake drum and brake linings.

SPECIFICATIONS

Item			Standard (mm)	Service Limit (mm)
Rear wheel	Rim runout	Radial	—	2.0
		Axial	—	2.0
	Rear brake drum I.D		130	131
Rear brake lining thickness			4.204	2.102
Rear shock absorber spring free length			200.5	194

TORQUE VALUES

Rear axle nut	11.0～13.0kg-m
Rear shock absorber upper mount bolt	4.0kg-m
Rear shock absorber lower mount bolt	2.5kg-m
Exhaust muffler joint lock nut	1.2kg-m
Exhaust muffler lock bolt	3.5kg-m
Brake arm bolt	1.0kg-m

TROUBLESHOOTING

Rear wheel wobbling

- Bent rim
- Faulty tire
- Axle not tightened properly

Soft rear shock absorber

- Weak shock absorber spring
- Faulty damper

Poor brake performance

- Brake not adjusted properly
- Worn brake linings
- Worn brake shoes at cam contacting area
- Worn brake cam
- Worn brake drum

REAR WHEEL

REMOVAL

Remove the exhaust muffler joint lock nuts and exhaust muffler lock bolts.
Remove the exhaust muffler. (⇨2-6)
Remove the rear axle nut.
Remove the rear shock absorber.
Remove the link flake.
Remove the rear wheel.

Link Flake

Rear Axle Nut

INSPECTION

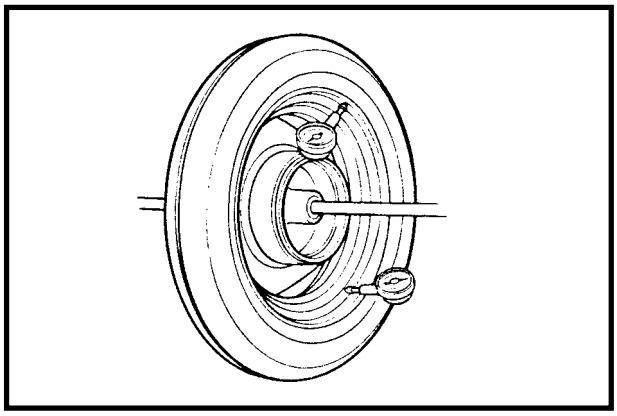
Measure the rear wheel rim runout.

Service Limits:

Radial: 2.0mm replace if over

Axial: 2.0mm replace if over

If the rim runout exceeds the specified service limits, check the final shaft bearing for excessive play and the final shaft for bending. Inspect the rear wheel and wheel rim for runout.



Turn the inner race of each bearing with your finger to see if they turn smoothly and quietly. Also check if the outer race fits tightly in the hub.
Replace the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the hub.

INSTALLATION

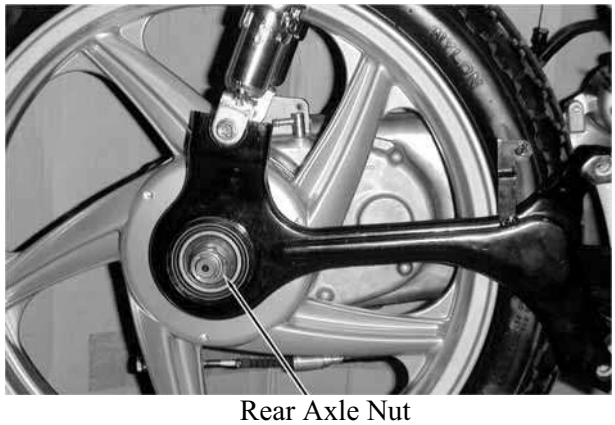
Install the rear wheel and apply SAE30# engine oil to the axle shaft threads. Then, tighten the rear axle nut.

Torque: 11.0～13.0kg-m

Install the exhaust muffler. (⇨2-6)
Tighten the exhaust muffler joint lock nuts and exhaust muffler lock bolt.

Torque:

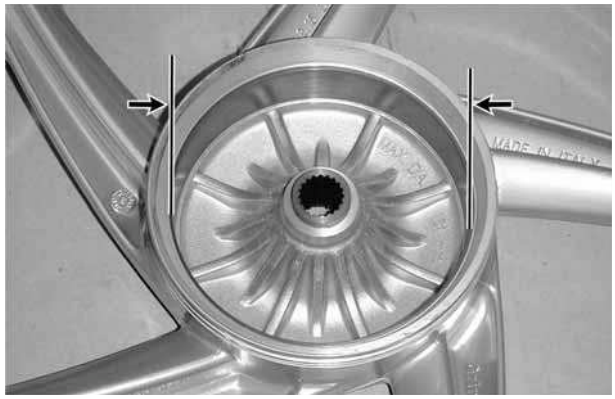
Exhaust muffler joint lock nut: 1.2kg-m
Exhaust muffler lock bolt: 3.5kg-m



Rear Axle Nut

REAR BRAKE

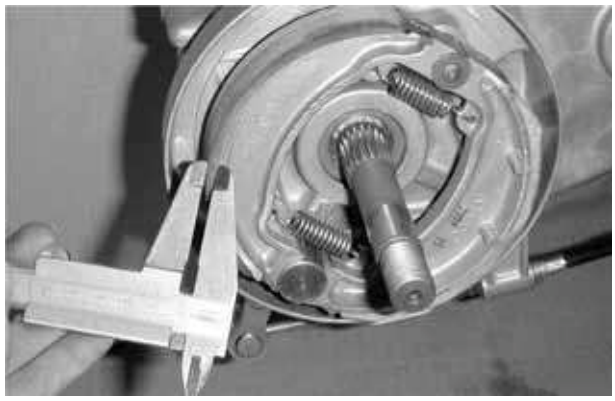
Remove the rear wheel. (⇨13-3)
Inspect the rear brake drum.
Measure the rear brake drum I.D.
Service Limits: 131mm replace if over



BRAKE LINING INSPECTION

Measure the brake lining thickness.
Service Limit: 2.0mm replace if below

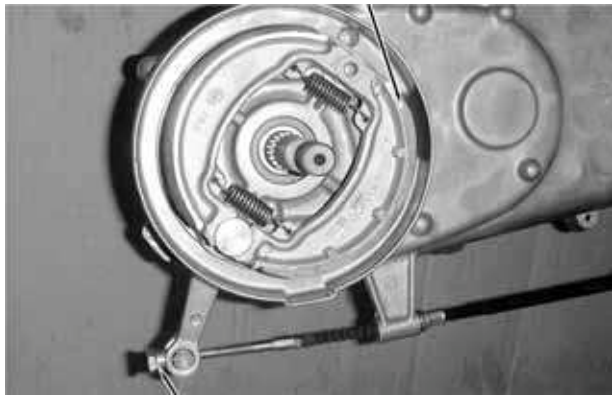
* Keep oil or grease off the brake linings.



Brake Shoe

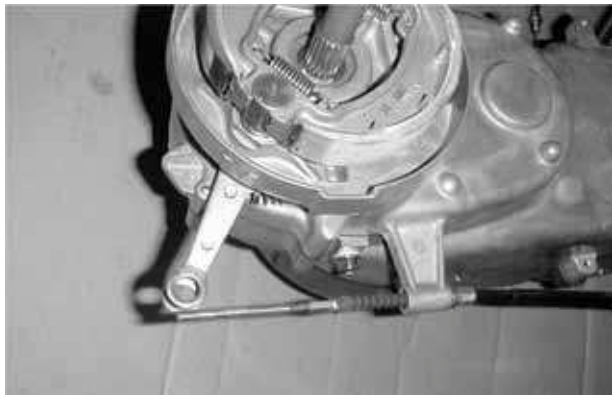
REAR BRAKE DISASSEMBLY

Remove the rear brake adjusting nut and disconnect the rear brake cable.
Remove the rear brake shoes.



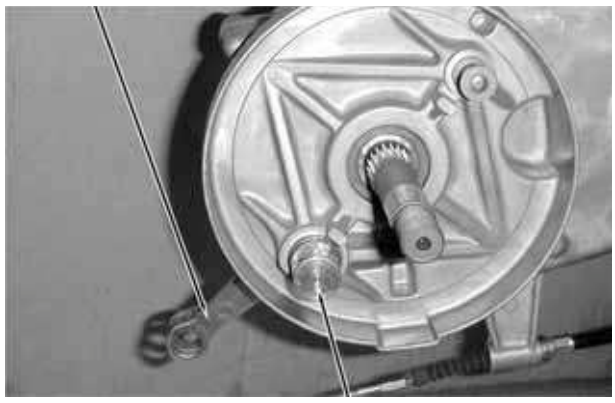
Adjusting Nut

Remove the brake arm bolt to remove the brake arm.
Remove the brake cam.



REAR BRAKE ASSEMBLY

Apply grease to the anchor pin.
Apply grease to the brake cam and install it.
Install the brake shoes.



Apply engine oil to the felt seal and install it to the brake cam.
Install the brake arm.

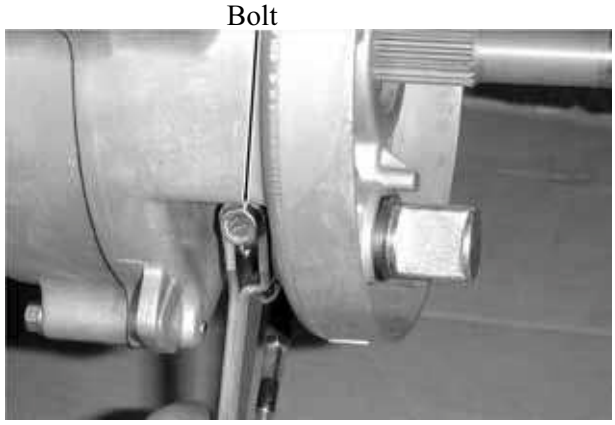
* Align the wide groove on the wear indicator plate with the wide tooth of the brake cam.

Install and tighten the brake arm bolt.

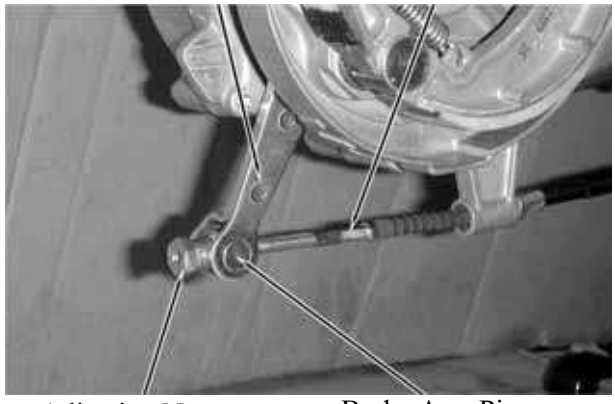
* Align the scribed line on the brake arm with the punch mark on the brake cam.

Torque: 1.0kg-m

Install the brake arm return spring.



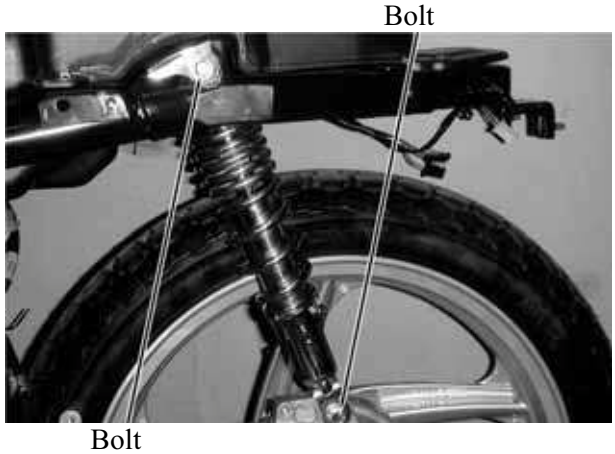
Install the brake arm pin.
Connect the brake cable and install the adjusting nut.
Install the rear wheel. (⇨13-3)
Adjust the rear brake lever free play. (⇨3-8)



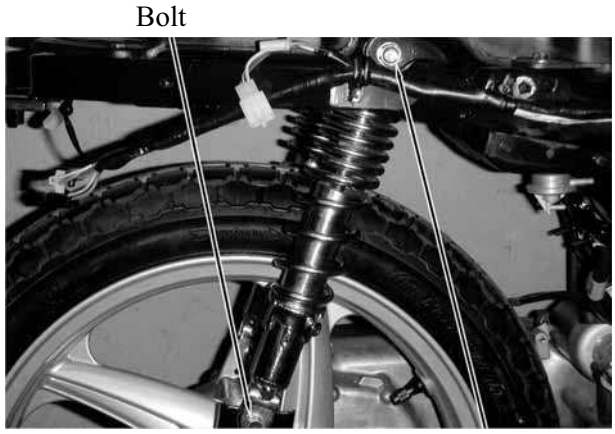
REAR SHOCK ABSORBER

REMOVAL

Remove the frame body cover. (⇨2)
Remove the air cleaner case. (⇨5-13)



Remove the rear shock absorber upper and lower mount bolts.
Remove the rear shock absorber.



ADJUSTABLE REAR CUSHION

To suit scooter behaviour to load condition rear cushion could be adjusted in spring prelocad.

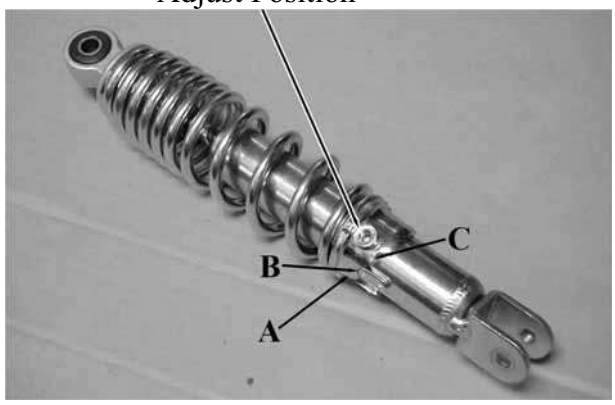
It is possible to adjust rear cushion in three positions:

A position “soft”

B position “medium”

C position “hard”

When you adjust rear cushion, the spring preload of rear cushions must be the same.



INSTALLATION

Install the rear shock absorber. First install the upper mount bolt and then the lower mount bolts and tighten them.
Install the air cleaner case and tighten the two bolts.
Install the frame body cover.
Torque:

Upper Mount Bolt: 4.0kg-m

Lower Mount Bolt: 2.5kg-m

BATTERY/CHARGING SYSTEM/A.C. GENERATOR

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TROUBLESHOOTING 14-3
BATTERY 14-4
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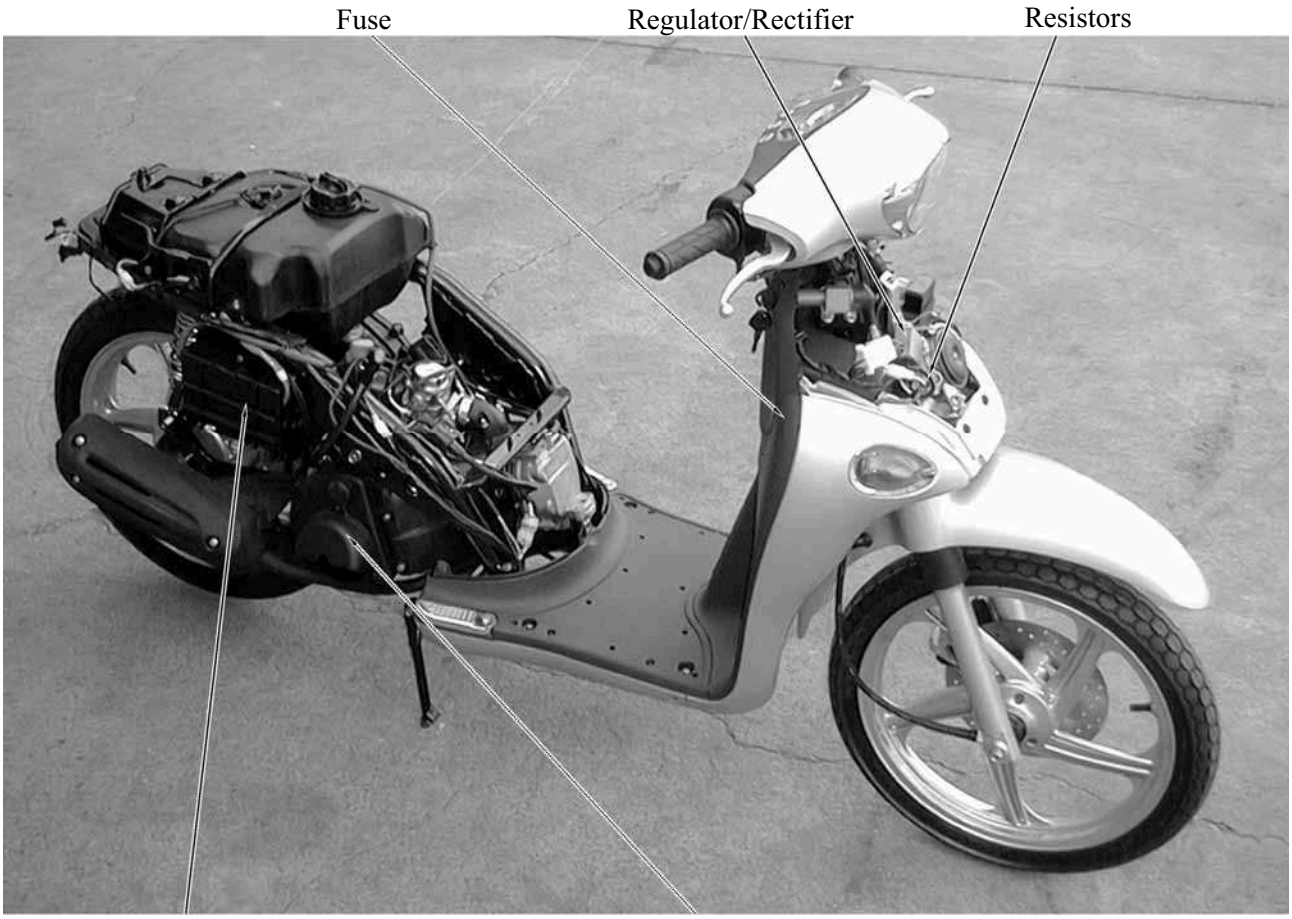
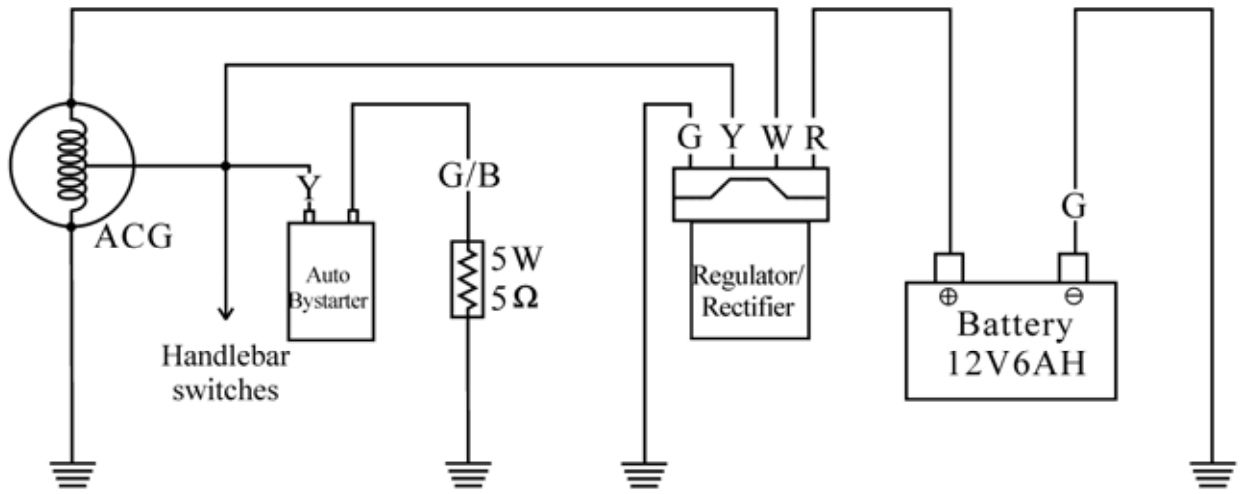
REGULATOR/RECTIFIER 14-6
A.C. GENERATOR CHARGING COIL 14-7
A.C. GENERATOR LIGHTING COIL 14-7
RESISTOR INSPECTION 14-7
A.C. GENERATOR 14-7



CHARGING CIRCUIT



SERVICE INFORMATION

GENERAL INSTRUCTIONS

The battery electrolyte (sulfuric acid) is poisonous and may seriously damage the skin and eyes. Avoid contact with skin, eyes, or clothing. In case of contact, flush with water and get prompt medical attention

- The battery can be charged and discharged repeatedly. If a discharged battery is not used for a long time, its service life will be shortened. Generally, the capacity of a battery will decrease after it is used for 2～3 years. A capacity-decreased battery will resume its voltage after it is recharged but its voltage decreases suddenly and then increases when a load is added.
- When a battery is overcharged, some symptoms can be found. If there is a short circuit inside the battery, no voltage is produced on the battery terminals. If the rectifier would not operate, the voltage will become too high and shorten the battery service life.
- If a battery is not used for a long time, it will discharge by itself and should be recharged every 3 months.
- A new battery filled with electrolyte will generate voltage within a certain time and it should be recharged when the capacity is insufficient. Recharging a new battery will prolong its service life.
- Inspect the charging system according to the sequence specified in the Troubleshooting.
- Do not disconnect and soon reconnect the power of any electrical equipment because the electronic parts in the regulator/rectifier will be damaged. Turn off the ignition switch before operation.
- It is not necessary to check the MF battery electrolyte or fill with distilled water.
- Check the load of the whole charging system.
- Do not quick charge the battery. Quick charging should only be done in an emergency.
- Remove the battery from the motorcycle for charging.
- When replacing the battery, do not use a traditional battery.
- When charging, check the voltage with an voltmeter.

SPECIFICATIONS

Item			Standard	
Battery	Capacity/Model		12V–6AH	
	Voltage (20℃)	Fully charged	13.1V	
		Undercharged	12.3V	
	Charging current		STD: 0.7A Quick: 3.0A	
	Charging time		STD: 5～10hr Quick: 30min	
A.C. Generator	Capacity		0.114KW/5000rpm	
	Lighting coil resistance (20℃)		Yellow～Green	0.1～1.0Ω
	Charging coil resistance (20℃)		White～Green	0.2～1.2Ω
Regulator/Rectifier	Type		Single-phase half-wave SCR	
	Limit voltage	Lighting	12.0～14.0V/5000rpm (Electric tester, tachometer)	
			10～13.0V/5000rpm	
		Charging	13.5～15.5V/5000rpm	
Resistor	Resistance (20℃) 5W5Ω		4.0～6.0Ω	
	Resistance (20℃) 30W7.5Ω		7.0～8.0Ω	

TORQUE VALUES

Pulser coil bolt	0.5kg-m
Coil lock bolt	0.9kg-m
Flywheel nut	5.5kg-m
Cooling fan bolt	0.9kg-m

SPECIAL TOOLS

Universal holder

Flywheel puller

TESTING INSTRUMENTS

Kowa electric tester

Sanwa electric tester

TROUBLESHOOTING

No power

- Dead battery
- Disconnected battery cable
- Fuse burned out
- Faulty ignition switch

Low power

- Weak battery connector
- Loose battery connection
- Charging system failure
- Faulty regulator/rectifier

Charging indicator light does not come on

- Dead battery
- Faulty charging indicator
- Faulty indicator light bulb

Charging indicator light does not go out

- Faulty battery
- Faulty charging indicator
- Faulty regulator/rectifier

Intermittent power

- Loose battery cable connection
- Loose charging system connection
- Loose connection or short circuit in lighting system

Charging system failure

- Loose, broken or short circuit wire or
- Faulty regulator/rectifier
- Faulty A.C. generator

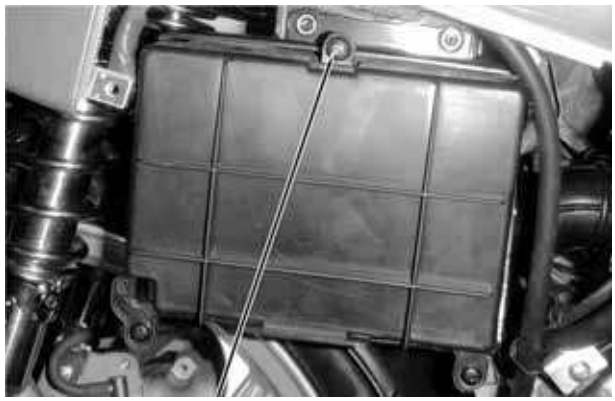
BATTERY

REMOVAL

Remove the frame cover screws.
Open the cover and remove the battery cover screw.
First disconnect the battery negative (-) cable and then the positive (+) cable.

* When disconnecting the battery positive (+) cable, do not touch the frame with tool; otherwise it will cause short circuit and sparks to fire the fuel.

The installation sequence is the reverse of removal.



* First connect the positive (+) cable and then negative (-) cable to avoid short circuit.

BATTERY VOLTAGE (OPEN CIRCUIT VOLTAGE) INSPECTION

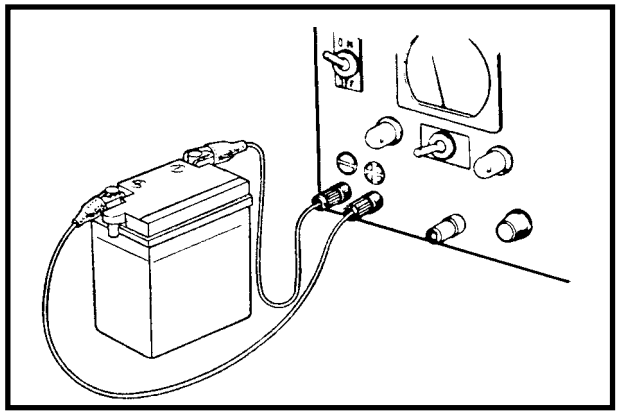
Open the battery cover and disconnect the battery cables.
Measure the voltage between the battery terminals.

Fully charged : 13.1V
Undercharged : 12.3V max.

* Battery charging inspection must be performed with a voltmeter.

CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (-) cable to the battery negative (-) terminal.



* • Keep flames and sparks away from a charging battery.
  • Turn power ON/OFF at the charger, not at the battery terminals to prevent sparks near the battery to avoid explosion.
  • Charge the battery according to the

* • Quick charging should only be done in an emergency.
  • Measure the voltage 30 minutes after the battery is charged.

Charging current: Standard : 0.7A
Quick : 3.0A
Charging time : Standard : 5～10 hours
Quick : 30 minutes
After charging: Open circuit voltage: 12.8V min.

CHARGING SYSTEM

SHORT CIRCUIT TEST

Disconnect the ground wire from the battery and connect an ammeter across the battery negative (-) terminal and the ground wire. Turn the ignition switch OFF and check for short circuit.

* Connect the electric tester positive (+) terminal to ground wire and the tester negative (-) terminal to the battery negative (-) terminal.

If any abnormality is found, check the ignition switch and wire harness for short circuit .

(-) Terminal

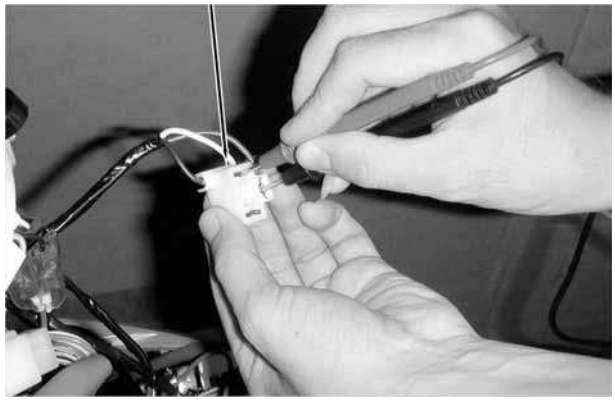
CURRENT TEST

This inspection must be performed with an electric tester when the battery is fully charged.
Warm up the engine for inspection.
Connect the electric tester across the battery terminals. Disconnect the red wire from the fuse terminal and connect an ammeter between the red wire lead and the fuse terminal as shown.
Attach a tachometer to the engine.
Start the engine and gradually increase the engine speed to measure the limit voltage and current.

Limit Voltage/Current: 13.5 ～ 15.5V/0.5A max. (5000rpm max.)

If the limit voltage is not within the specified range, check the regulator/rectifier. (⇨14)

Headlight Wire Coupler



LIGHTING SYSTEM LIMIT VOLTAGE INSPECTION

Remove the headlight cover. (⇨2)

* Measure the voltage with the electric tester in the AC range.

Limit Voltage: 12～14V/5000rpm

If the limit voltage is not within the specified range, check the regulator/rectifier. (⇨14)

PERFORMANCE TEST

RPM / Position	2500	6000
Day	1.0A min.	2.0A min.
Night	1.0A min.	2.0A min.

Perform this test with a fully charged of battery

REGULATOR/RECTIFIER

MAIN HARNESS CIRCUIT INSPECTION

Remove the front cover. (⇨2-4)
Remove the regulator/rectifier 4P coupler and check for continuity between the wire harness terminals according to the following :

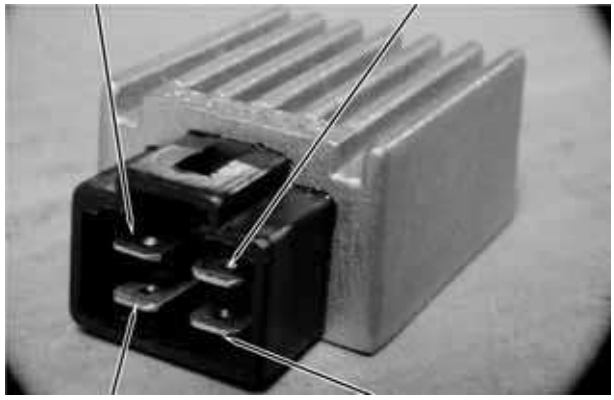
Item (Wire Color)	Judgement
Between battery (red) and engine ground	Battery has voltage
Between ground wire (green) and engine ground	Continuity exists
Between lighting wire (yellow) and engine ground (Remove the resistor coupler and auto bystarter coupler and turn the lighting switch OFF for inspection)	A.C. generator coil has resistance
Between charging coil (white) and engine ground	A.C. generator coil has resistance

Regulator/Rectifier

REGULATOR/RECTIFIER INSPECTION

If the main harness terminals are normal, check the regulator/rectifier coupler for loose connection and measure the resistances between the regulator/rectifier terminals.

Red Green



White Yellow

*

- Do not touch the tester probes with your finger because human body has resistance.
- Use the following specified testers for accurate testing. Use of an improper tester in an improper range may give false readings.
  – Kowa Electric Tester
  – Sanwa Electric Tester
  – Kowa Electric Tester TH-5H
- Proper range for testing:
  – Use XKΩ range for Sanwa Tester
  – Use X100Ω range for Kowa Tester
- If the dry battery in the tester is weak, the readings will be incorrect. In this case, check the dry battery.
- The Kowa tester readings are 100 times the actual values. Be careful during testing.

Replace the regulator/rectifier if the readings are not within the specifications in the table.

Unit: Ω

Probe⊕ / Probe(-)	White	Yellow	Red	Green
White		∞	2K~6K	∞
Yellow	∞		∞	17K~25K
Red	∞	∞		∞
Green	∞	17K~25K	∞	

A.C. GENERATOR CHARGING COIL

* The inspection of A.C. generator charging coil can be made with the engine installed.

INSPECTION

Disconnect the A.C. generator 3P connector.
Measure the resistance between the A.C. generator white wire and engine ground with an electric tester.

Standard: 0.2～1.2Ω(at 20℃)

Replace the A.C. generator charging coil if the reading is not within the specifications.

Charging Coil Wire (White)

A.C. GENERATOR LIGHTING COIL

* The inspection of A.C. generator lighting coil can be made with the engine installed.

INSPECTION

Disconnect the A.C. generator 3P connector.
Measure the resistance between the A.C. generator yellow wire and engine ground with an electric tester.

Standard: 0.2～1.2Ω(at 20℃)

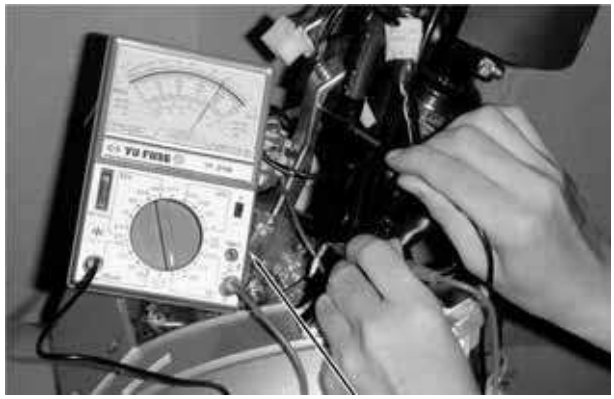
Replace the A.C. generator lighting coil if the reading is not within the specifications.

Lighting Coil Wire (Yellow)

RESISTOR INSPECTION

Remove the front cover. (⇨2-4)
Measure the resistance between the resistor lead and engine ground.

Resistances: 30W7.5Ω: 7.0～8.0Ω
5W5.0Ω: 4.0～6.0Ω



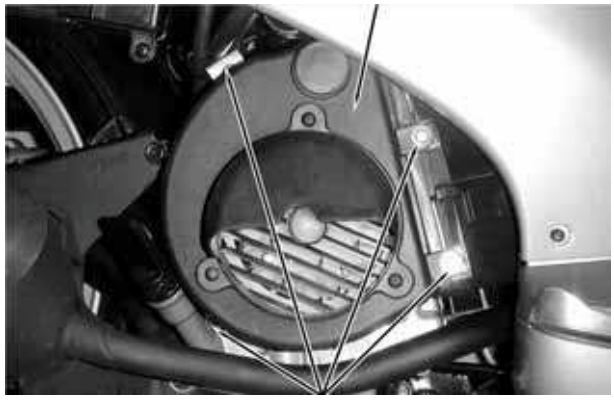
Resistor

A.C. GENERATOR

REMOVAL

Remove the rear right side cover. (⇨2)
Remove the four bolts attaching the cooling fan cover to remove the fan cover.

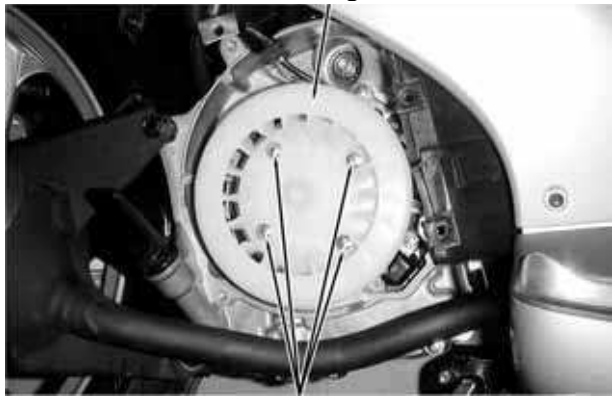
Fan Cover



Bolts

Remove the cooling fan by removing the four cooling fan attaching bolts.

Cooling Fan



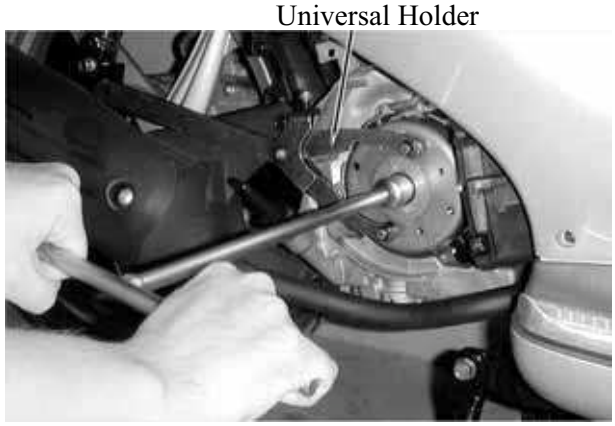
Bolts

Hold the flywheel with an universal holder.
Remove the flywheel nut.

Special

Universal Holder

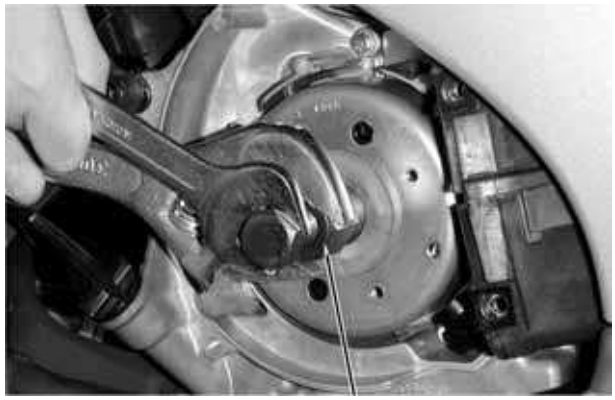
Universal Holder



Remove the A.C. generator flywheel using the flywheel puller.
Remove the woodruff key.

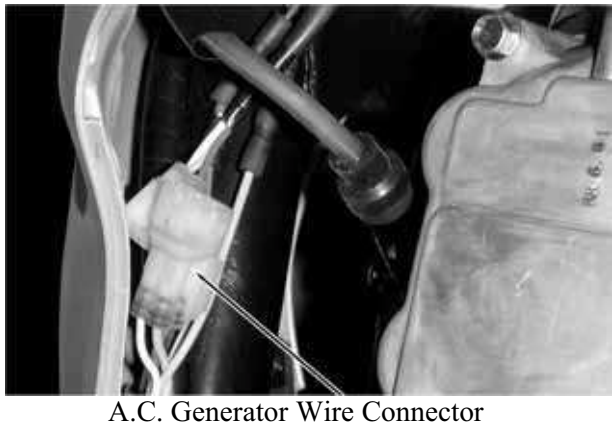
Special

Flywheel Puller



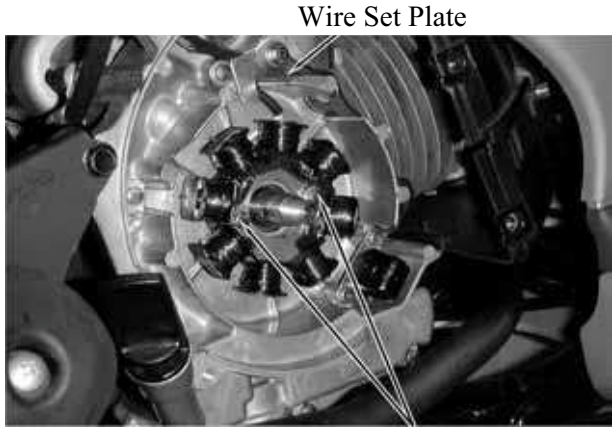
Flywheel Puller

Remove the A.C. generator wire connector.

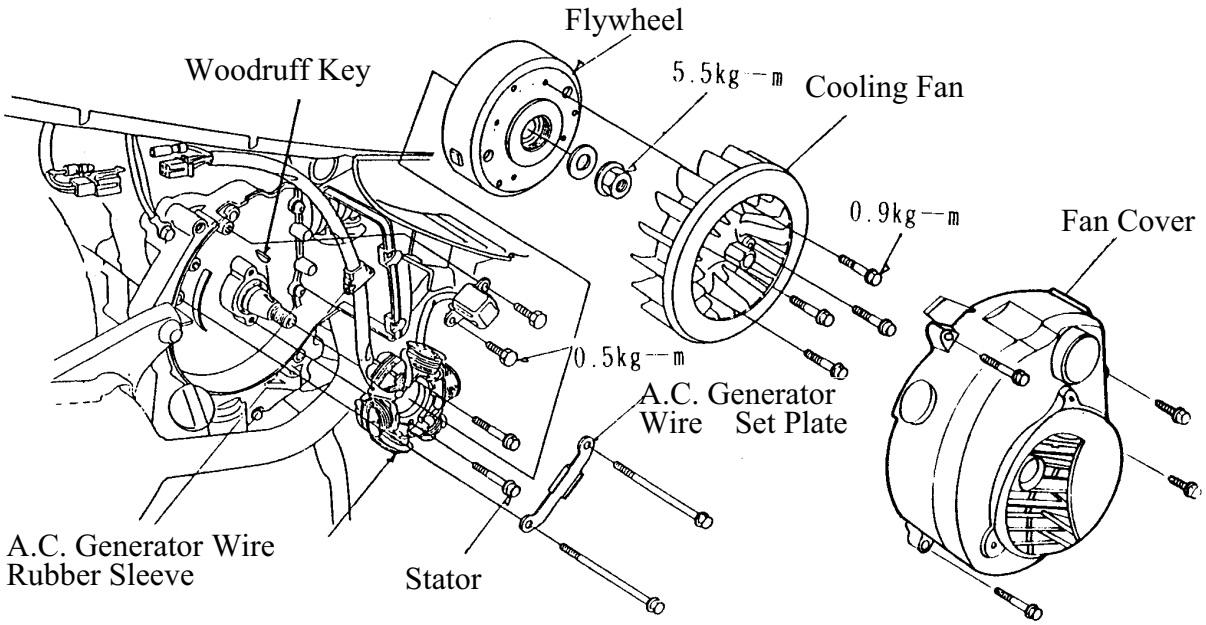


A.C. Generator Wire Connector

Remove the A.C. generator wire set plate.
Remove the pulser coil bolts.
Remove the A.C. generator wire rubber sleeve and pulser coil from the right crankcase.
Remove the two bolts and A.C. generator stator.



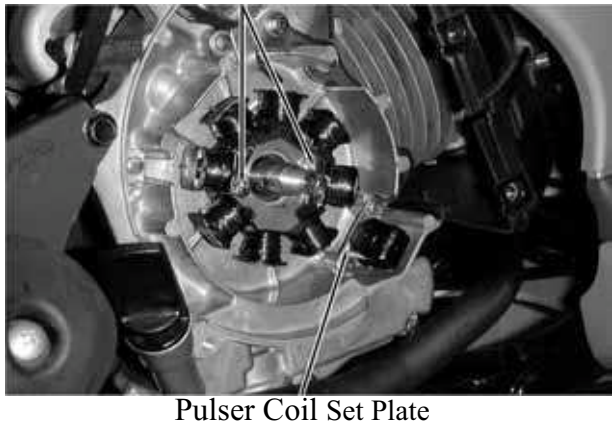
INSTALLATION



Install the A.C. generator stator and pulser coil onto the right crankcase.
Tighten the stator and pulser coil bolts.

Torques: Pulser Coil : 0.5kg-m
Stator : 0.9kg-m

Install the A.C. generator wire rubber sleeve and A.C. generator wire set plate.



Connect the A.C. generator wire connector.

Clean the taper hole in the flywheel off any burrs and dirt.
Install the woodruff key in the crankshaft keyway.

Woodruff Key

Install the flywheel onto the crankshaft with the flywheel hole aligned with the crankshaft woodruff key.

* The inside of the flywheel is magnetic. Make sure that there is no bolt or nut before installation.

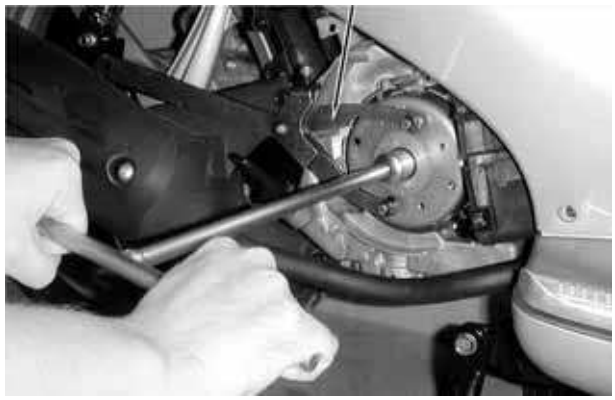
Hold the flywheel with the universal holder and tighten the flywheel nut.

Torque: 5.5kg-m

Special

Universal Holder

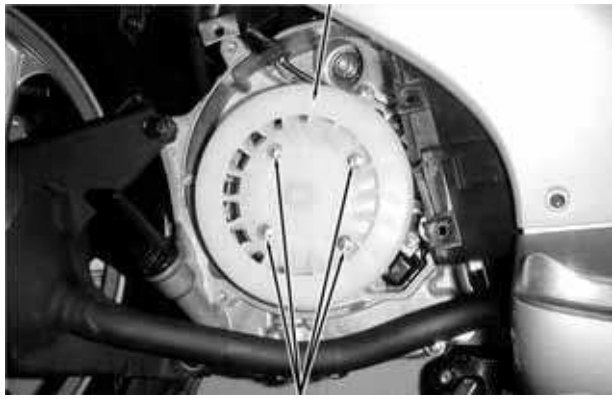
Universal Holder



Install the cooling fan.

Torque: 0.9kg-m

Cooling Fan



Bolts

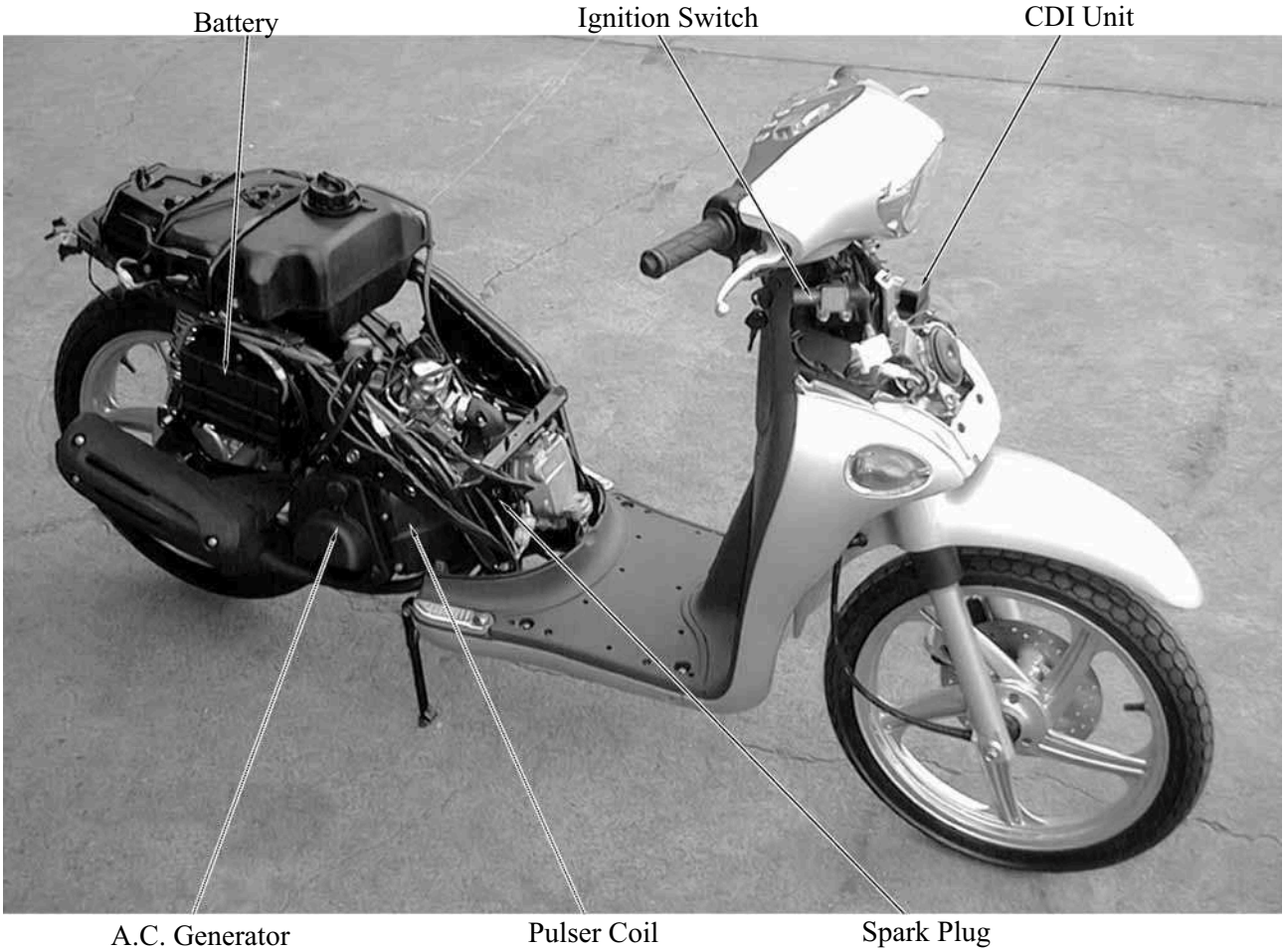
Fan Cover

Install the fan cover.
Install the rear right side cover. (⇨2)

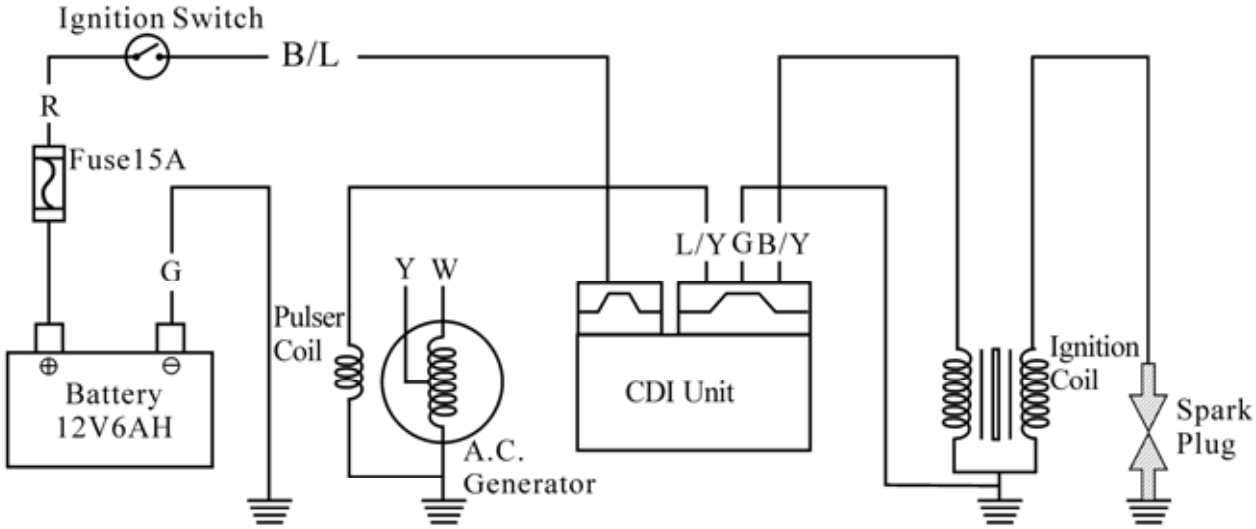
IGNITION SYSTEM

SERVICE INFORMATION 15-2
TROUBLESHOOTING 15-3
CDI UNIT INSPECTION 15-4
IGNITION COIL 15-5
PULSER COIL 15-6

15. IGNITION SYSTEM



IGNITION CIRCUIT



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Check the ignition system according to the sequence specified in the Troubleshooting. (⇨15)
- The ignition system adopts CDI unit and the ignition timing cannot be adjusted.
- If the timing is incorrect, inspect the CDI unit and A.C. generator and replace any faulty parts.
- Loose connector and poor wire connection are the main causes of faulty ignition system. Check each connector before operation.
- Use of spark plug with improper heat range is the main cause of poor engine performance.
- The inspections in this section are focused on maximum voltage. The inspection of ignition coil resistance is also described in this section.
- Inspect the ignition switch according to the continuity table specified in page 17-4.
- Inspect the spark plug referring to Section 3.
- Remove the A.C. generator and pulser coil referring to Section 14.

SPECIFICATIONS

Item			Standard
Spark plug	Standard type		C7HSA(NGK)
	Hot type		C6HSA(NGK)
	Cold type		C8HSA(NGK)
Spark plug gap			0.6～0.7mm
Ignition timing	"F" mark Full advance		13°BTDC/1,700±100rpm 27°BTDC/5,000±100rpm
Ignition coil resistance (20℃)	Primary coil		0.1～1.0Ω
	Secondary coil	with plug cap	7～12KΩ
		without plug cap	2～4KΩ
Pulser coil resistance (20℃)			70～130Ω
Ignition coil primary side max. voltage			12V min.
Pulser coil max. voltage			2.1V min.

TESTING INSTRUMENT

Kowa Electric Tester

TROUBLESHOOTING

High voltage too low

- Weak battery or low engine speed
- Loose ignition system connection
- Faulty CDI unit
- Faulty ignition coil
- Faulty pulser coil

Normal high voltage but no spark at plug

- Faulty spark plug
- Electric leakage in ignition secondary circuit
- Faulty ignition coil

Good spark at plug but engine would not start

- Faulty CDI unit or incorrect ignition timing
- Improperly tightened A.C. generator flywheel

No high voltage

- Faulty ignition switch
- Faulty CDI unit
- Poorly connected or broken CDI ground wire
- Dead battery or faulty regulator/rectifier
- Faulty ignition coil connector
- Faulty pulser coil

CDI UNIT INSPECTION

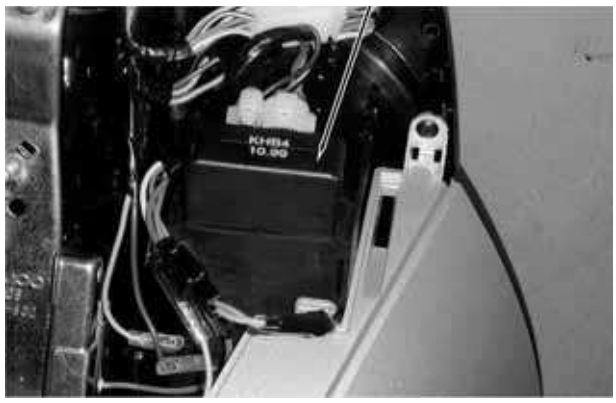
Remove the front cover screws.
Disconnect the CDI coupler and remove the CDI unit.
Measure the resistance between the terminals using the electric tester..
.

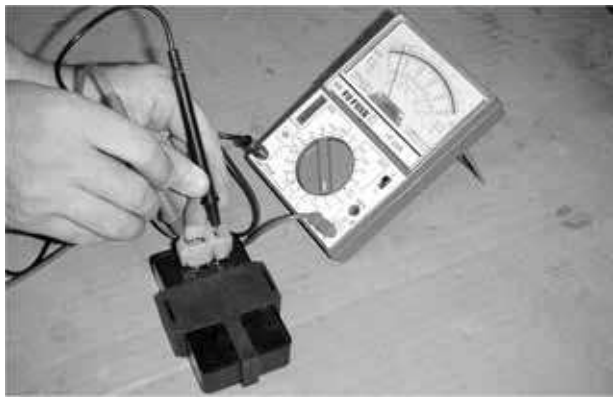
✻
- Due to the semiconductor in circuit, it is necessary to use a specified tester for accurate testing. Use of an improper tester in an improper range may give false readings.
- Use a Sanwa Electric Tester or Kowa Electric Tester.
- In this table, "Needle swings then returns" indicates that there is a charging current applied to a condenser. The needle will then remain at "∞" unless the condenser is discharged.

Unit: KΩ

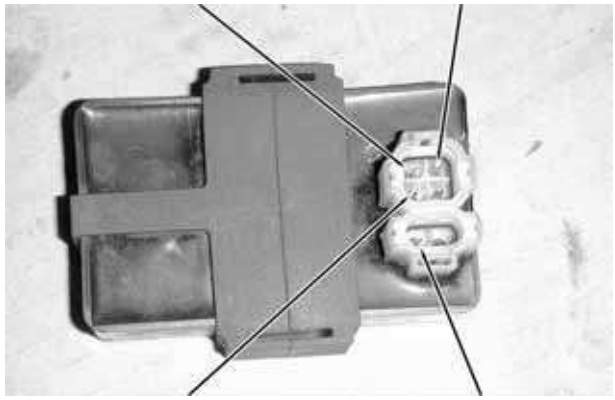
Probe⊕ / (-)Probe	Black/ Blue	Black/ Yellow	Blue/ Yellow	Green
Black/ Blue		150~280	20~30	∞
Black/ Yellow	75~100		50~70	∞
Blue/ Yellow	7~10	50~70		∞
Green	∞	∞	∞	

CDI Unit





Blue/Yellow Black/Yellow



Green Black/Blue

IGNITION COIL

REMOVAL

Remove the frame body cover. (⇨2)
Remove the spark plug cap.
Disconnect the ignition coil wires and remove the ignition coil bolt and ignition coil.

Ignition Coil

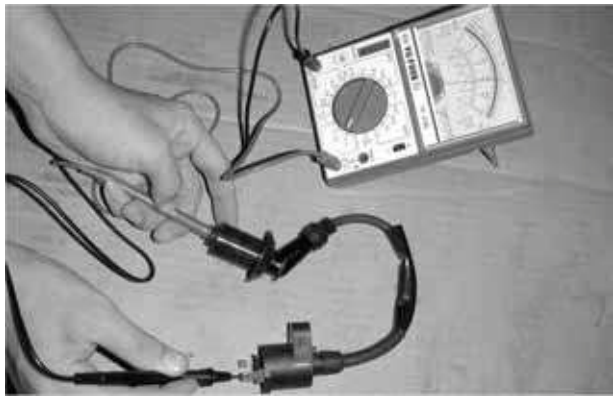
INSPECTION

CONTINUITY TEST

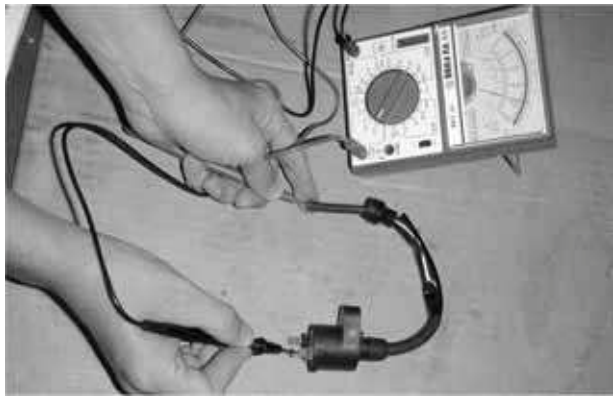
* This test is to inspect the continuity of ignition coil.

Measure the resistance between the ignition coil primary coil terminals.
Resistance: 0.1～1.0Ω/20℃

Measure the secondary coil resistances with and without the spark plug cap.
Resistances:
(with plug cap): 7～12KΩ/20℃
(without plug cap): 2～4KΩ/20℃



* Correctly operate the tester following the manufacturer‘s instructions.



PULSER COIL

INSPECTION

* This test is performed with the stator installed in the engine.

Remove the frame body cover. (⇨2)
Disconnect the A.C. generator connector.
Measure the pulser coil resistance between the blue/yellow and green wire terminals.

Resistance: 70～130Ω/20℃

Refer to page 14-7 for the A.C. generator removal.

IGNITION TIMING INSPECTION

* The CDI unit is not adjustable. If the ignition timing is incorrect, inspect the CDI unit, pulser coil and A.C. generator and replace any faulty parts.

Remove the timing hole cap.

Timing Hole Cap

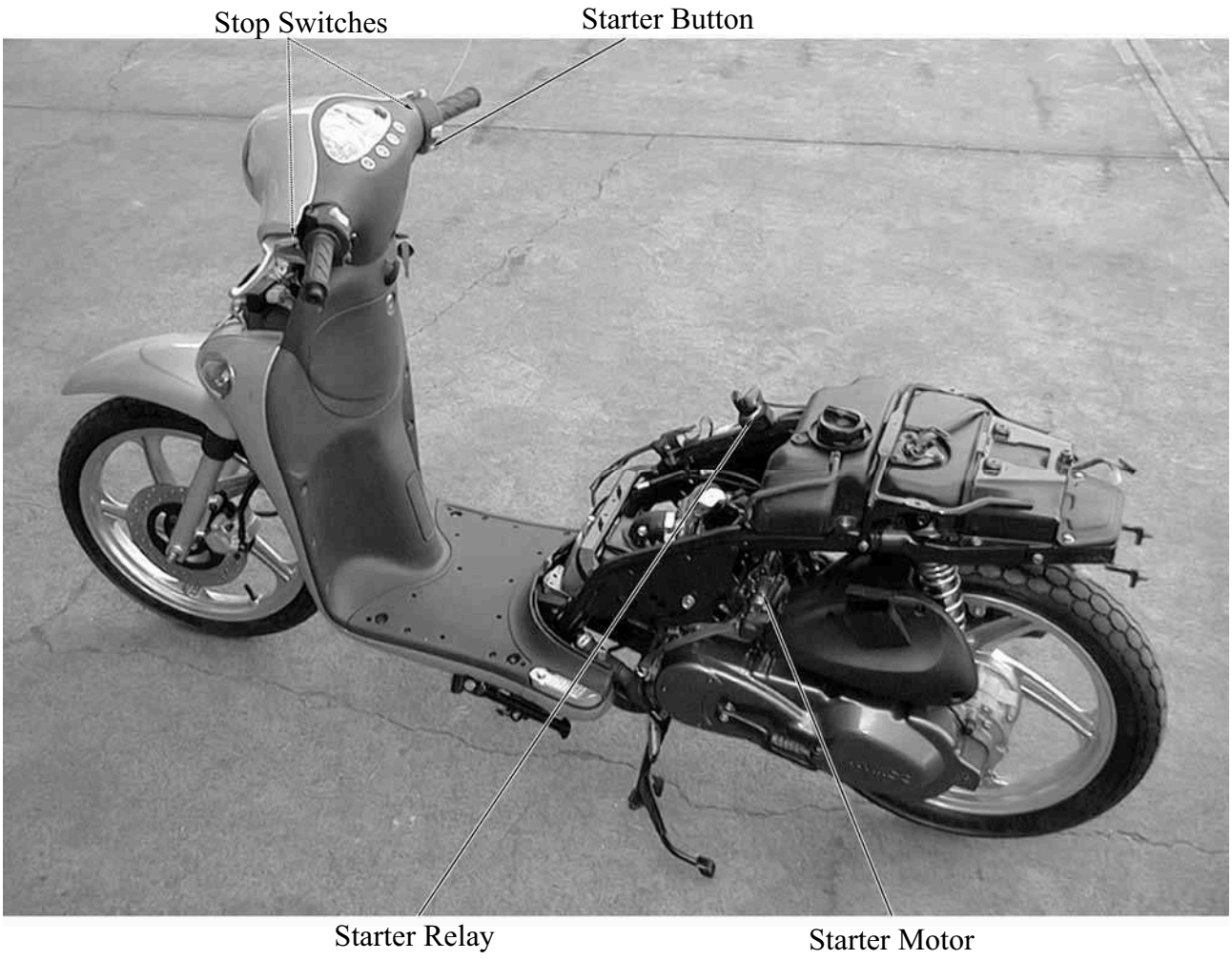
Warm up the engine and check the ignition timing with a timing light.
When the engine is running at 1700rpm, the ignition timing is correct if the "F" mark aligns with the index mark within ±3°.

Ignition Timing: 13° BTDC/1700rpm

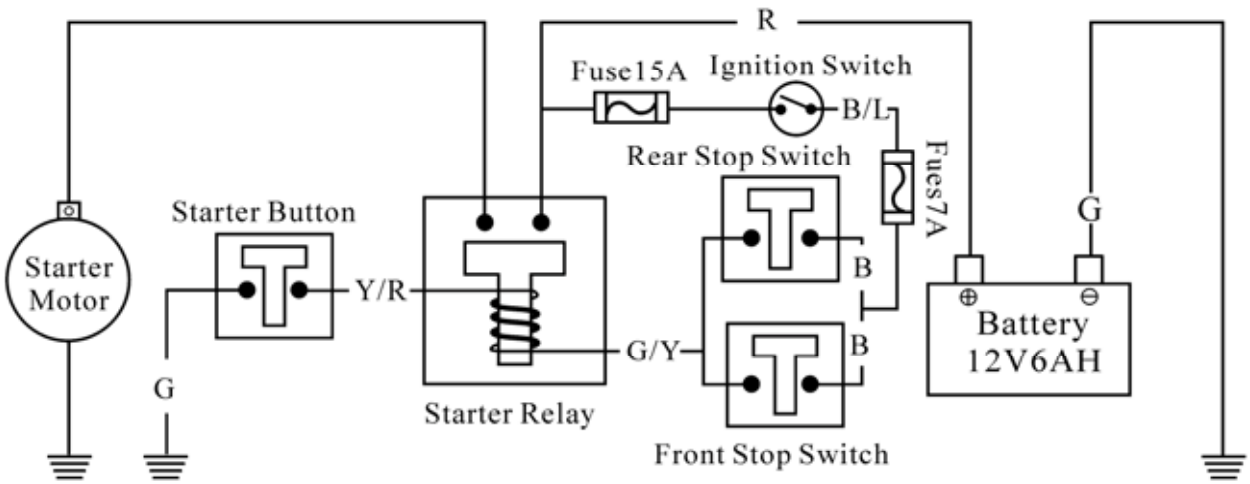
16. STARTING SYSTEM

SERVICE INFORMATION 16-2
TROUBLESHOOTING 16-2
STARTER MOTOR 16-3
STARTER RELAY 16-5
STARTER CLUTCH 16-6

16. STARTING SYSTEM



STARTING CIRCUIT



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The removal of starter motor can be accomplished with the engine installed.
- For the starter clutch removal, refer to Section 4.

SPECIFICATIONS

Item	Standard (mm)	Service Limit (mm)
Starter motor brush length	12.5	8.5

TORQUE VALUES

Starter clutch cover socket bolt 1.2kg-m

Starter clutch lock nut 9.5kg-m

SPECIAL TOOLS

Lock nut wrench

Universal holder

TROUBLESHOOTING

Starter motor would not turn

- Fuse burned out
- Weak battery
- Faulty ignition switch
- Faulty starter clutch
- Faulty front or rear stop switch
- Faulty starter relay
- Poorly connected, broken or shorted wire
- Faulty starter motor

Lack of power

- Weak battery
- Loose wire or connection
- Foreign matter stuck in starter motor or gear

Starter motor rotates but engine does not start

- Faulty starter clutch
- Starter motor rotates reversely
- Weak battery

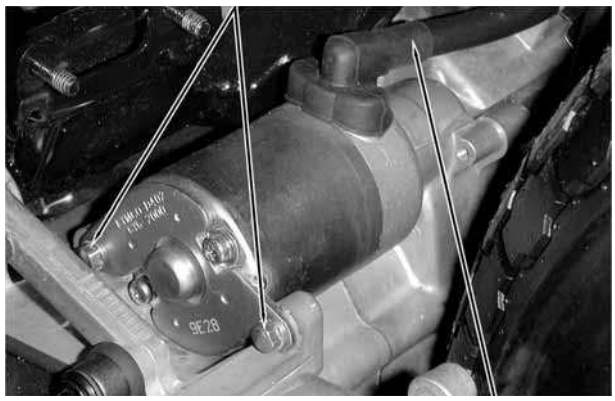
STARTER MOTOR

REMOVAL

- Before removing the starter motor, turn the ignition switch OFF and remove the battery ground. Then, turn on the ignition switch and push the starter button to see if the starter motor operates properly.

Remove the two starter motor mounting bolts and the motor.

Bolts



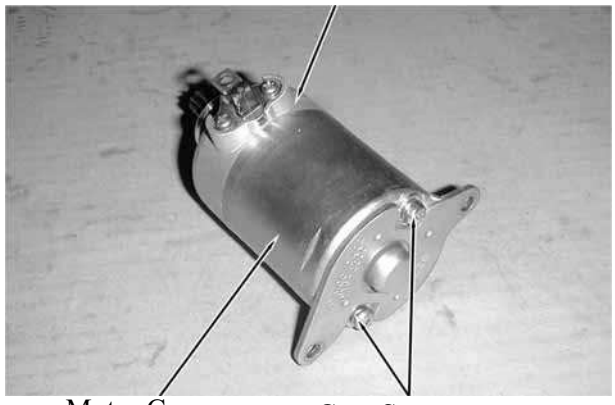
Starter Motor Cable

Remove the waterproof rubber jacket and disconnect the starter motor cable connector.

DISASSEMBLY

Remove the two starter motor case screws, front cover, motor case and other parts.

Front Cover



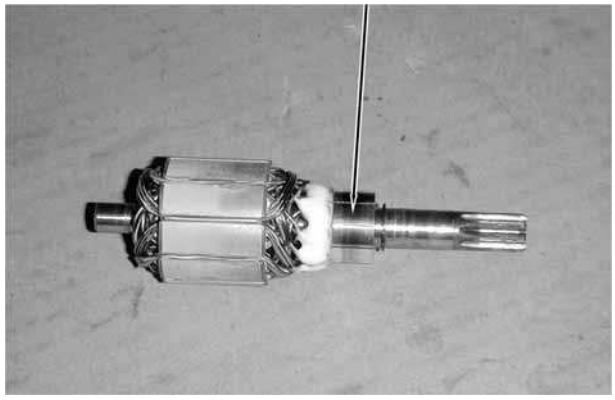
Motor Case

Case Screws

INSPECTION

Inspect the removed parts for wear, damage or discoloration and replace if necessary.
Clean the commutator if there is metal powder between the segments.

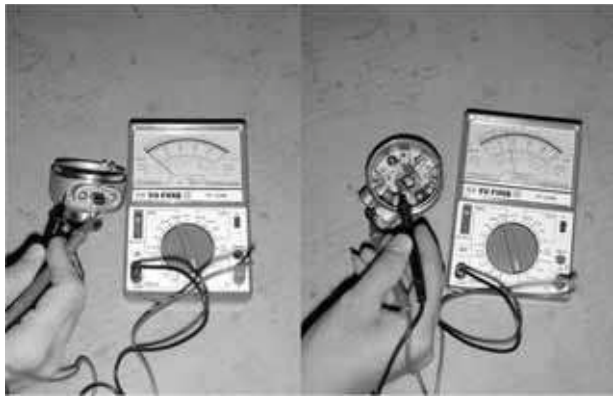
Commutator



Check for continuity between pairs of the commutator segments and there should be continuity.
Also, make a continuity check between individual commutator segments and the armature shaft. There should be no continuity.

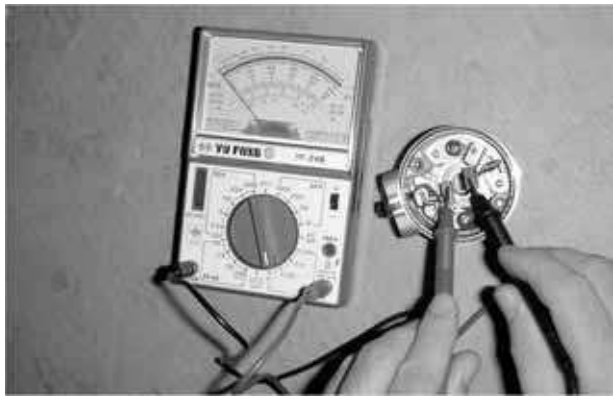
STARTER MOTOR CASE CONTINUITY CHECK

Check to confirm that there is no continuity between the starter motor wire terminal and the motor front cover.
Also check for the continuity between the wire terminal and each brush.
Replace if necessary.



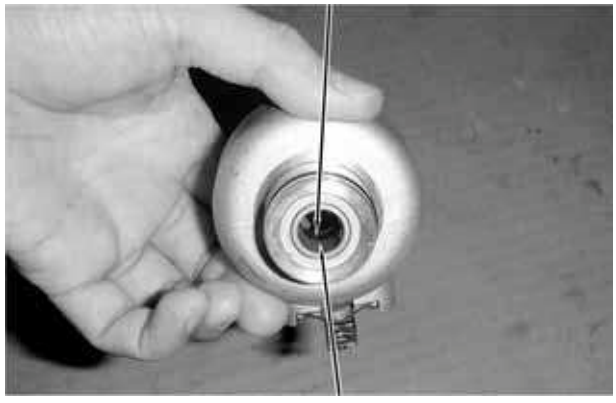
Measure the length of the brushes.
Service Limit: 8.5mm replace if below

Check for continuity between the brushes. If there is continuity, replace with new ones.



Check if the needle bushing in the front cover turns freely and has no excessive play.
Replace if necessary.
Check the dust seal for wear or damage.

Dust Seal



Bushing

ASSEMBLY

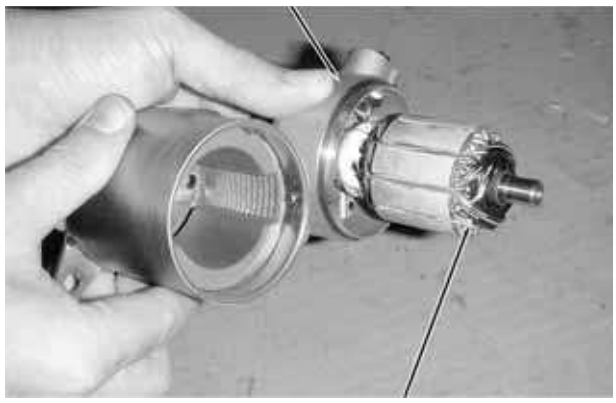
Apply grease to the dust seal in the front cover.
Install the brushes onto the brush holders.
Apply a thin coat of grease to the two ends of the armature shaft.
Insert the commutator into the front cover.

- Be careful not to damage the brush and armature shaft mating surfaces.
- When installing the commutator, the armature shaft should not damage the dust seal lip.

Install a new O-ring to the front cover.
Install the starter motor case, aligning the tab on the motor case with the groove on the front cover.
Tighten the starter motor case screws.

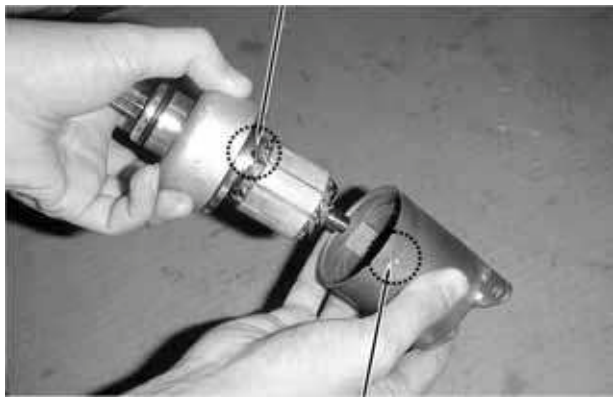
- When assembling the front cover and motor case, slightly press down the armature shaft to assemble them.

Front Cover



Commutator

Groove



Tab

STARTER RELAY

INSPECTION

Remove the frame body cover. (⇨2-2)
Turn the ignition switch ON and the starter relay is normal if you hear a click when the starter button is depressed.
If there is no click sound:

- Inspect the starter relay voltage
- Inspect the starter relay ground circuit
- Inspect the starter relay operation

Starter Relay

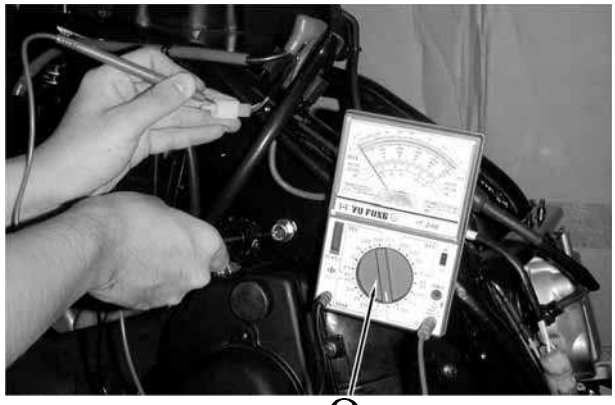
STARTER RELAY VOLTAGE INSPECTION

Place the motorcycle on its main stand.
Measure the voltage between the starter relay connector green/yellow wire (-) and engine ground.
Turn the ignition switch ON and the battery voltage should be normal when the brake lever is fully applied.
If the battery has no voltage, inspect the stop switch continuity and cable.

DC V

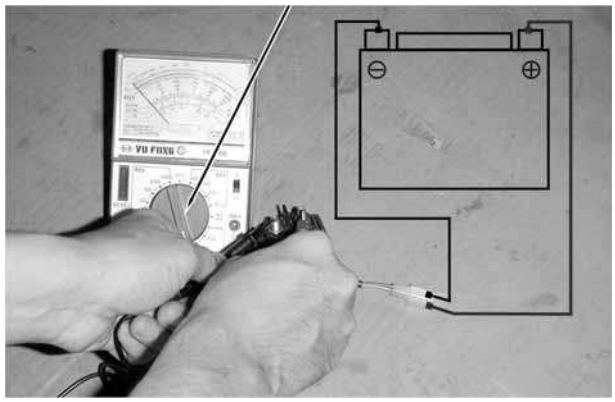
STARTER RELAY GROUND CIRCUIT INSPECTION

Disconnect the starter relay wire connector.
Check for continuity between the yellow/red wire terminal and ground.
There should be continuity when the starter button is depressed.
If there is no continuity, check the starter button for continuity and inspect the wire.



OPERATION TEST

Connect the electric tester to the starter relay larger terminals that connect to the battery positive cable and the starter motor cable.
Connect a fully charged battery across the starter relay yellow/red and green/yellow wire terminals.
Check for continuity between the starter relay large terminals. The relay is normal if there is continuity.



INSTALLATION

Connect the starter motor cable connector and properly install the waterproof rubber jacket.
Check the O-ring for wear or damage and replace if necessary.
Apply grease to the O-ring and install the starter motor.
Tighten the two mounting bolts.

- The starter motor cable connector must be installed properly.

STARTER CLUTCH

REMOVAL

Remove the A.C. generator. (⇨14-7)
Remove the right crankcase cover. (⇨4-3)

Remove the starter clutch lock nut.

Special

Lock Nut Wrench

Universal Holder

- Note that the lock nut is left threaded.

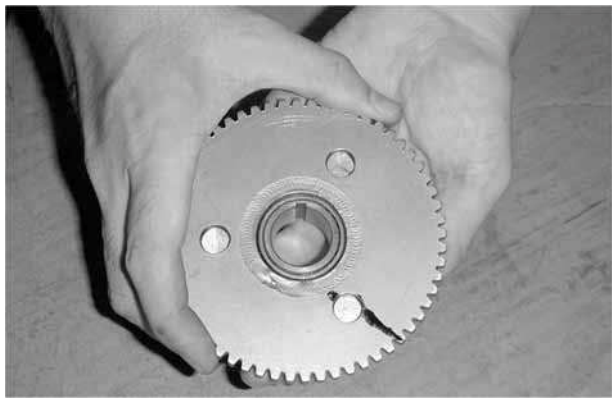
Remove the starter clutch.
Remove the starter idle gear and shaft.

Starter Idle Gear Shaft

Lock Nut Lock Nut Wrench

INSPECTION

Inspect the operation of the starter drive gear when it is assembled on the clutch.
The starter drive gear should turn clockwise freely and should not turn counterclockwise.



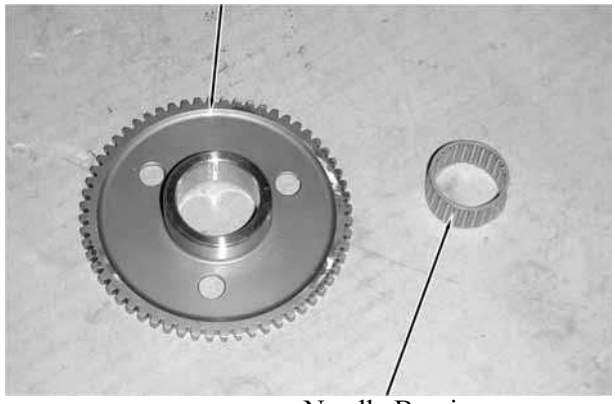
STARTER CLUTCH DISASSEMBLY

Inspect the starter drive gear for wear or damage and replace if necessary.
Measure the starter drive gear I.D.

Service Limit: 32.06mm replace if over

Inspect the needle bearing for wear or damage and replace if necessary.

Starter Drive Gear

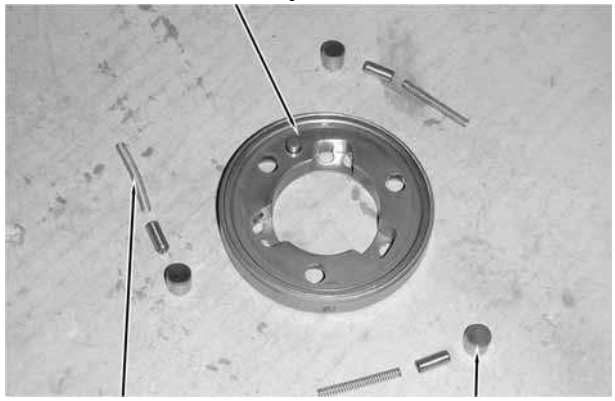


Needle Bearing

CLUTCH BODY DISASSEMBLY

Remove the rollers, plungers and springs from the clutch body.
Inspect the clutch body for wear or damage and replace if necessary.
Inspect each roller and plunger for wear or damage and check for weak spring.
Replace if necessary.

Clutch Body

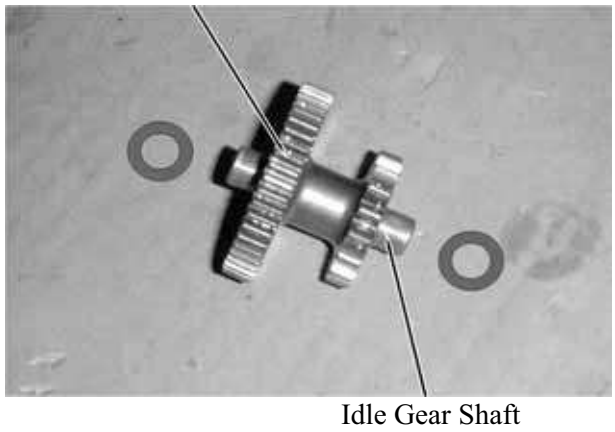


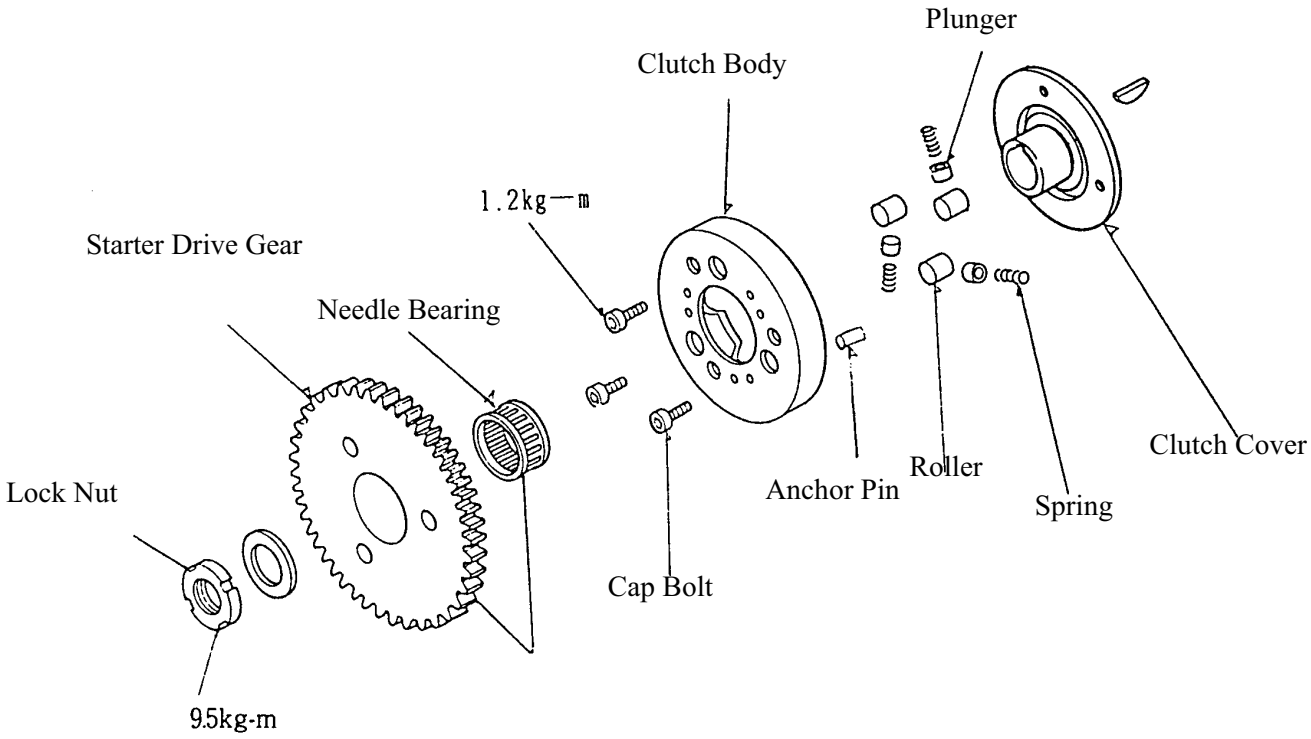
Spring Roller

Measure the clutch cover O.D.
Service Limit: 27.94mm replace if over

Measure the starter idle gear I.D.
Service Limit: 10.05mm replace if over

Measure the starter idle gear shaft O.D.
Service Limit: 9.94mm replace if below





ASSEMBLY

Install the springs, plungers and rollers onto the clutch body.
Install the clutch cover by aligning the clutch cover anchor pin with the hole in the clutch body. Apply locking agent to the threads of the clutch cover bolts and tighten them.

Torque: 1.2kg-m

Apply engine oil to the needle bearing and starter drive gear and then install them to the clutch body.

INSTALLATION

Install the starter clutch onto the crankshaft.
Apply engine oil to the starter idle gear and shaft and then install them.
Hold the starter drive gear with the universal holder and tighten the starter clutch lock nut.

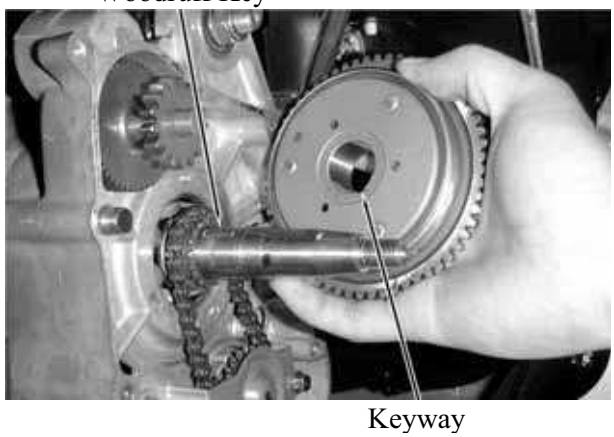
Torque: 9.5kg-m

Special

Universal Holder

- Note that the lock nut is left threaded.

Install the right crankcase cover. (⇨4-7)



LIGHTS/INSTRUMENTS/SWITCHES

ELECTRICAL EQUIPMENT LAYOUT 17-1
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FUEL GAUGE 17-6
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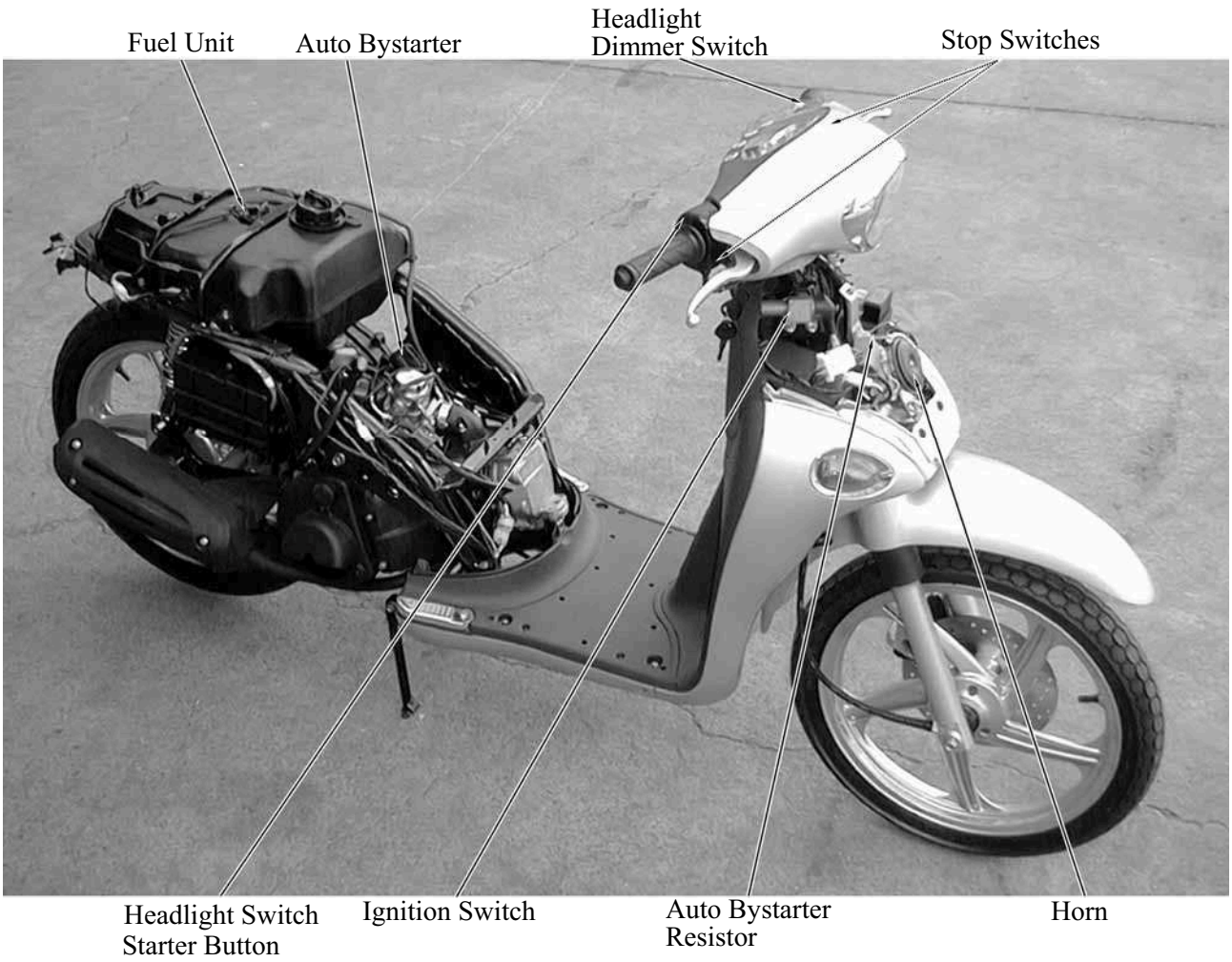
ELECTRICAL EQUIPMENT LAYOUT



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- An electric tester is needed to measure or test the electric equipment.
- Be sure to use fuses and bulbs of the same specifications to avoid damage of electrical equipment.
- After installation of each switch, a continuity check must be performed. A continuity check can usually be made without removing the part from the motorcycle.

TROUBLESHOOTING

Lights do not come on and horn does not sound when ignition switch is "ON"

- Faulty ignition switch
- Fuse burned out
- Weak battery
- Burned bulb
- Faulty switch
- Faulty horn
- Poorly connected, broken or shorted wire

Fuel gauge pointer does not move

- Faulty fuel gauge
- Faulty fuel unit
- Poorly connected, broken or shorted wire

Engine starts but stalls during idling

- Faulty auto bystarter
- Faulty auto bystarter resistor
- Poorly connected or broken wire
- Clogged carburetor

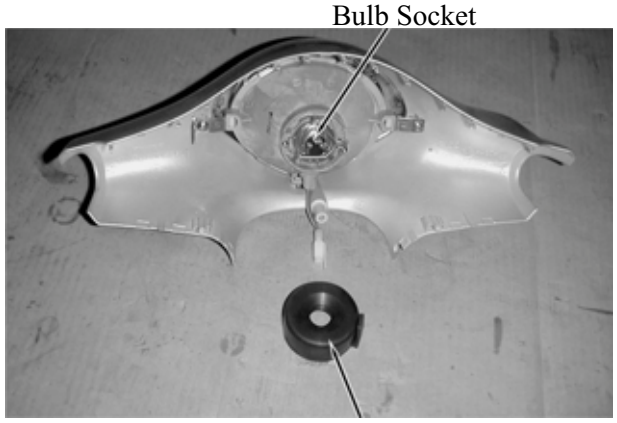
Fuel gauge pointer does not register correctly

- Faulty fuel gauge
- Faulty fuel unit
- Faulty fuel unit float

HEADLIGHT

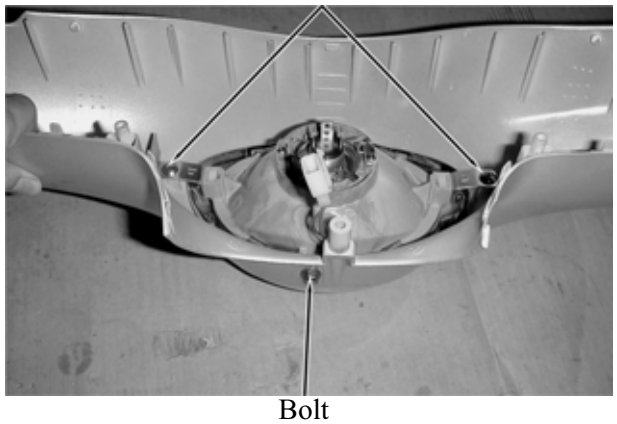
BULB REPLACEMENT

Remove the handlebar front cover. (⇨2)
Remove the rubber boot from the bulb socket.
Remove the bulb socket by turning it counter-clockwise.
Remove the bulb for replacement.
Install a new bulb, aligning the groove on the bulb socket with the tab on the bulb.
Install the bulb socket.
Install the rubber boot.
Install the front cover. (⇨2)



HEADLIGHT REMOVAL

Remove the handlebar front cover. (⇨2)
Remove the two screws attaching the headlight.
Remove the headlight unit.
Remove adjust the headlight beam bolt.
The installation sequence is the reverse of removal.
After installation, adjust the headlight beam. (⇨3-9)



FRONT TURN SIGNAL LIGHT

Remove the turn signal bulb shell screw. (⇨2)
Remove the front turn signal bulb socket and replace the bulb.
The installation sequence is the reverse of removal.

POSITION LIGHT/REAR TURN SIGNAL LIGHT

BULB REPLACEMENT

Remove the bulb shell screw.
The installation sequence is the reverse of removal.

IGNITION SWITCH

INSPECTION

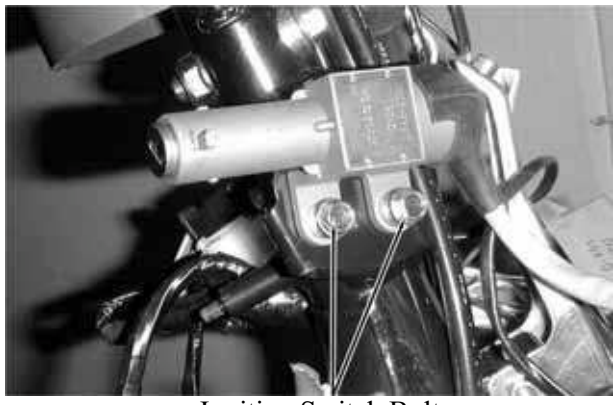
Remove the front cover. (⇨2-4)
Disconnect the ignition switch wire coupler. Check for continuity between the wire terminals.

Position	BAT1	IG	E	BAT2
LOCK		○——	——○	
OFF		○——	——○	
ON	○——			——○
COLOR	Red	Black/White	Green	Black

Replacement

Remove the two mounting bolts to remove the ignition switch holder.
Remove the two screws to remove the ignition switch for replacement.

Ignition Switch Coupler



Ignition Switch Bolts

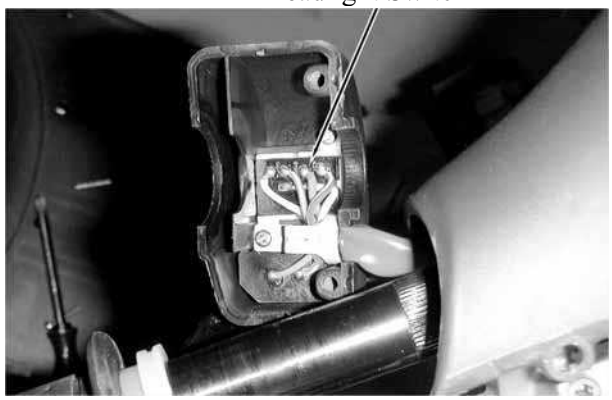
HANDLEBAR SWITCHES

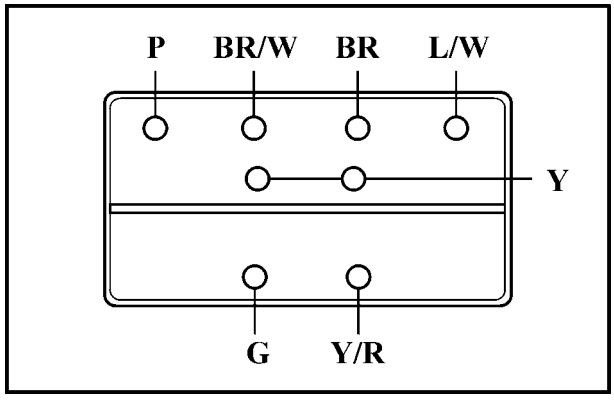
HEADLIGHT SWITCH INSPECTION

Remove the handlebar front and rear covers. (⇨2-4)
Disconnect the headlight switch wire couplers. Check for continuity between the wire terminals.

Position	CI	RE	TL	HL	PO
OFF	○——	——○			
N	○——		——○		
P	○——		○——		——○
N	○——		○——	——○	
H	○——		○——	——○	
COLOR	Yellow	Pink	Brown	Blue/ White	Brown/ White

Headlight Switch

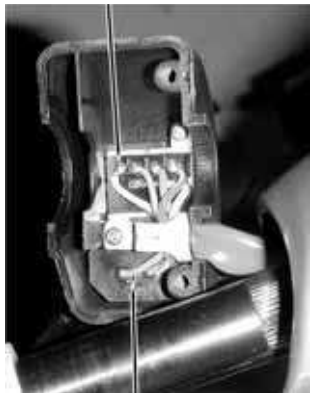


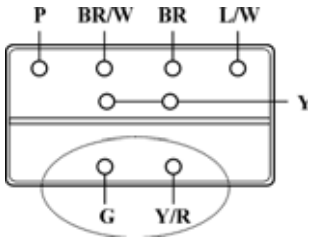


STARTER SWITCH

POSITION	ST	E
FREE		
PUSH	○———	———○
COLOR	Yellow/Red	Green

Headlight Switch

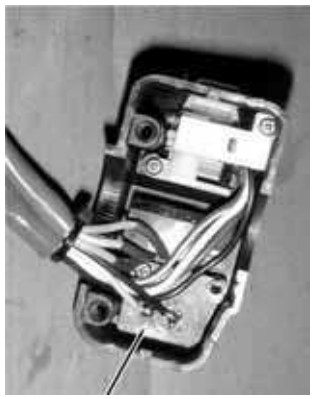


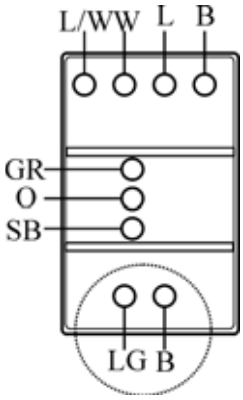


Starter Switch

HORN SWITCH

POSITION	HO	BAT
FREE		
PUSH	○———	———○
COLOR	Light Green	Brown/Blue

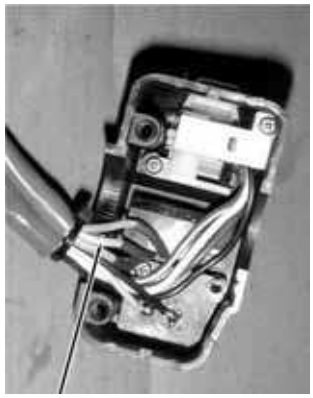


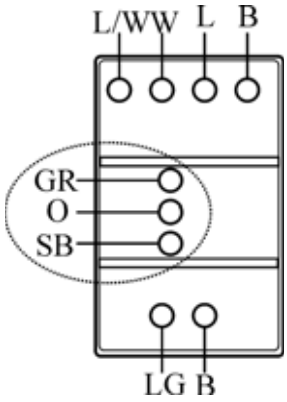


Horn Button

TURN SIGNAL SWITCH

POSITION	R	L	WR
L		○———	———○
N			
R	○———	———	———○
COLOR	Sky Blue	Orange	Gray

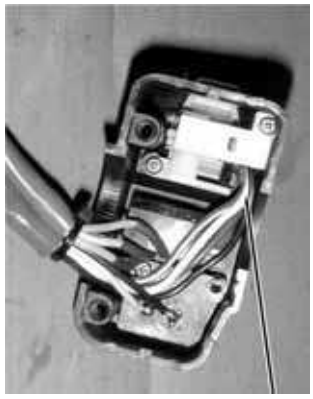


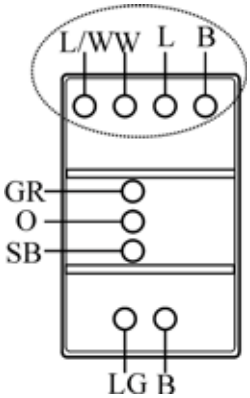


Turn Signal Switch

DIMMER SWITCH

POSITION	HI	HL	BAT	LO
PASS		○———		———○
	○———		———	
LO		○———		———○
N	○———	○———		———○
HI	○———	○———		
COLOR	Blue	Blue/White	Black	White



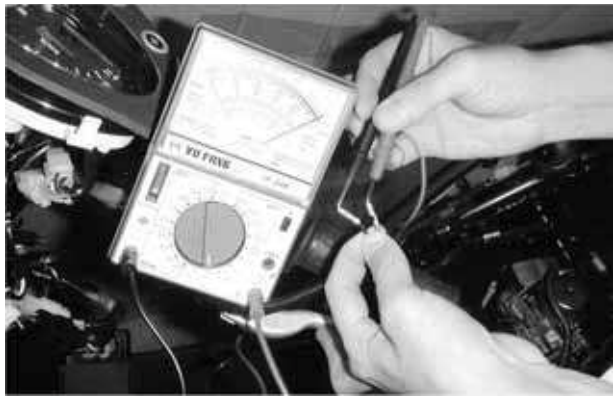


Dimmer Switch

STOP SWITCH

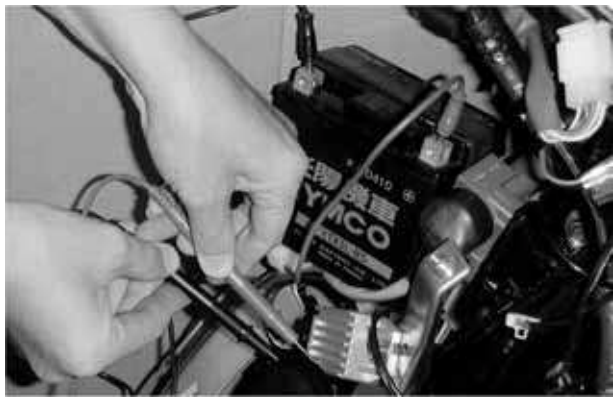
INSPECTION

Remove the handlebar front cover. (⇨2)
Disconnect the front stop switch wire coupler.
Check for continuity between the wire terminals when the front brake lever is applied. The switch is normal if there is continuity.



HORN INSPECTION

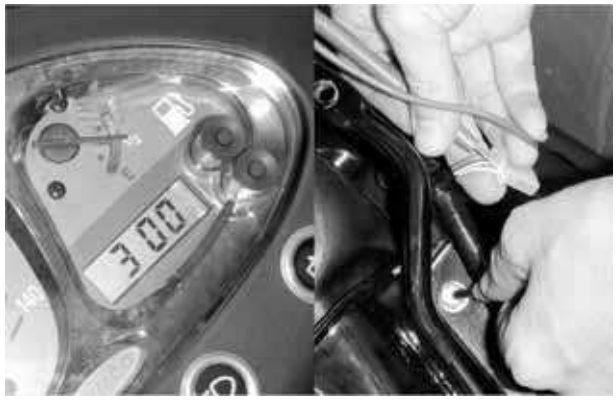
Remove the front cover. (⇨2)
Disconnect the horn wire coupler.
The horn is normal if it sounds when a 12V battery is connected across the horn wire terminals.



FUEL GAUGE

INSPECTION

Remove the rear right side cover. (⇨2)
Disconnect the fuel gauge wire connector.
Turn the ignition switch ON.
Connect the green and yellow/white wires and the fuel gauge needle should move from E to F.
Connect the green and blue/white wires and the fuel gauge needle should move from F to E.



FUEL UNIT

REMOVAL

Remove the met-in box. (⇨2)
Remove the rear right side cover. (⇨2)
Disconnect the fuel unit wire connector.
Remove the fuel unit.

* Be careful not to bend or damage the fuel unit float arm.

Fuel Unit Connector

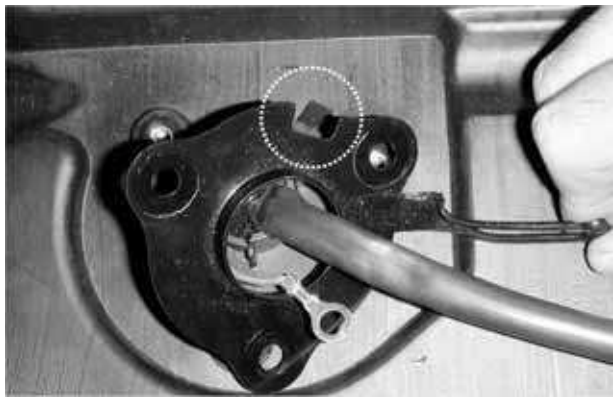
INSPECTION

Measure the resistance between the fuel unit wire terminals with the float at upper and lower positions.

RESISTANCES Unit: Ω

Color \ Float	Upper	Lower
G～Y/W	26～38	450～550
G～L/W	450～550	26～38
Y/W～L/W	450～550	450～550

The installation sequence is the reverse of removal.



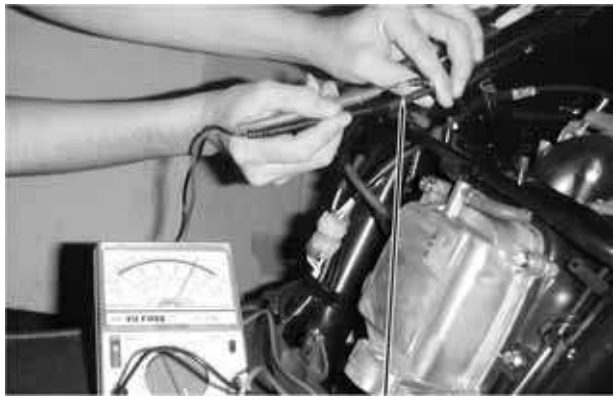
* • Install the fuel unit by aligning the groove on the fuel unit with the tab on the fuel tank.

AUTO BYSTARTER

AUTO BYSTARTER INSPECTION

Remove the rear right side cover. (⇨2)
Disconnect the auto bystarter wire connector.
Measure the resistance between the yellow and green/black wire terminals.

Resistance: 10Ω max.



Auto Bystarter Connector

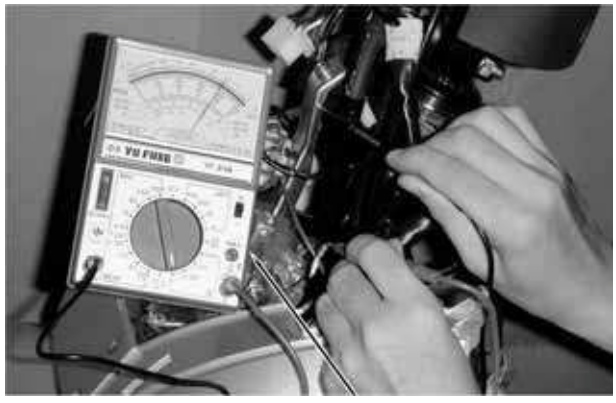
* Perform this operation when the engine is cold.

RESISTOR INSPECTION

Remove the front cover. (⇨2)
Disconnect the green/black and green wires and measuring the resistance between the wire terminals.

Resistance: 5Ω max.

If the needle remains at "∞", it indicates that the resistor is faulty and must be replaced.



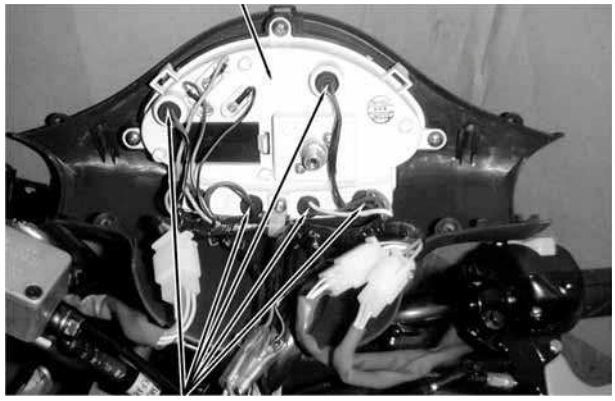
Auto Bystarter Resistor

INSTRUMENTS

BULB REPLACEMENT

Remove the front cover. (⇨2)
Remove the bulb socket and replace the bulb.
The installation sequence is the reverse of removal.

Instruments

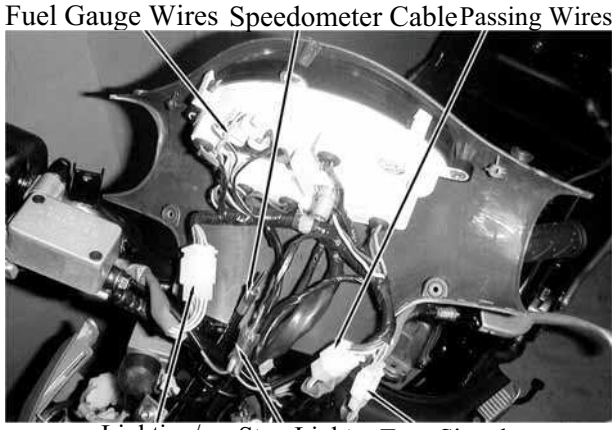


Bulb Socket

INSTRUMENTS REPLACEMENT

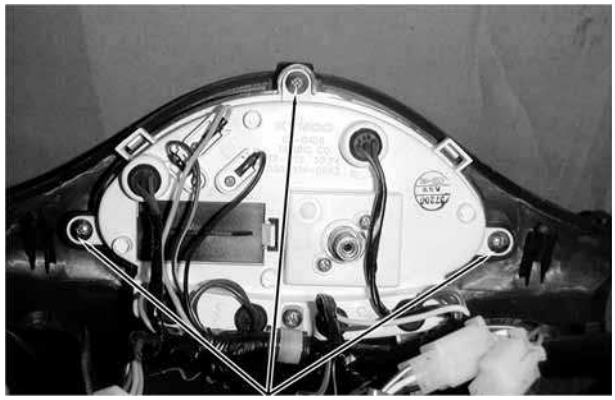
Remove the handlebar front cover. (⇨2)
Remove the handlebar rear cover. (⇨2)
Disconnect the right and left handlebar switches wire couplers.
Disconnect the speedometer cable.
Remove the instrument bulb sockets
Disconnect the three fuel gauge wires.
Remove the instrument wire clamp screw.

Dimmer/
Fuel Gauge Wires Speedometer Cable Passing Wires



Lighting/ Start Wires Stop Light Wires Turn Signal Wires

Remove the three screws attaching the instruments to the handlebar rear cover.
Remove the instruments.

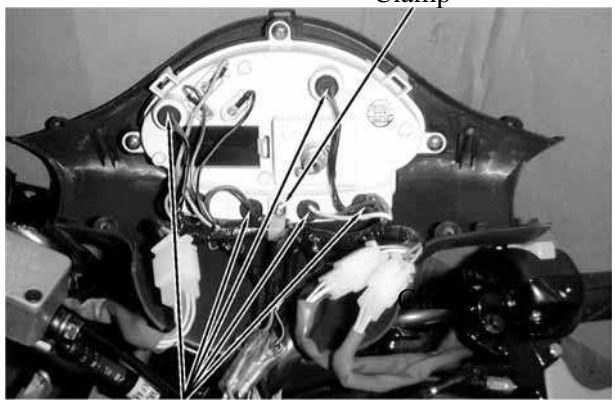


Screws

ASSEMBLY/INSTALLATION

The assembly and installation sequence is the reverse of removal.

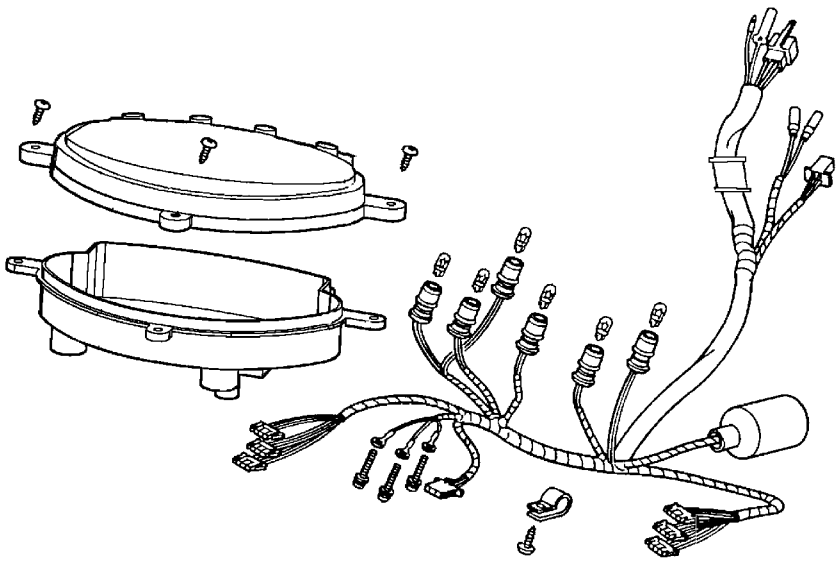
Clamp



Bulb Socket

DISASSEMBLY

Remove the screws to disassemble the instruments.



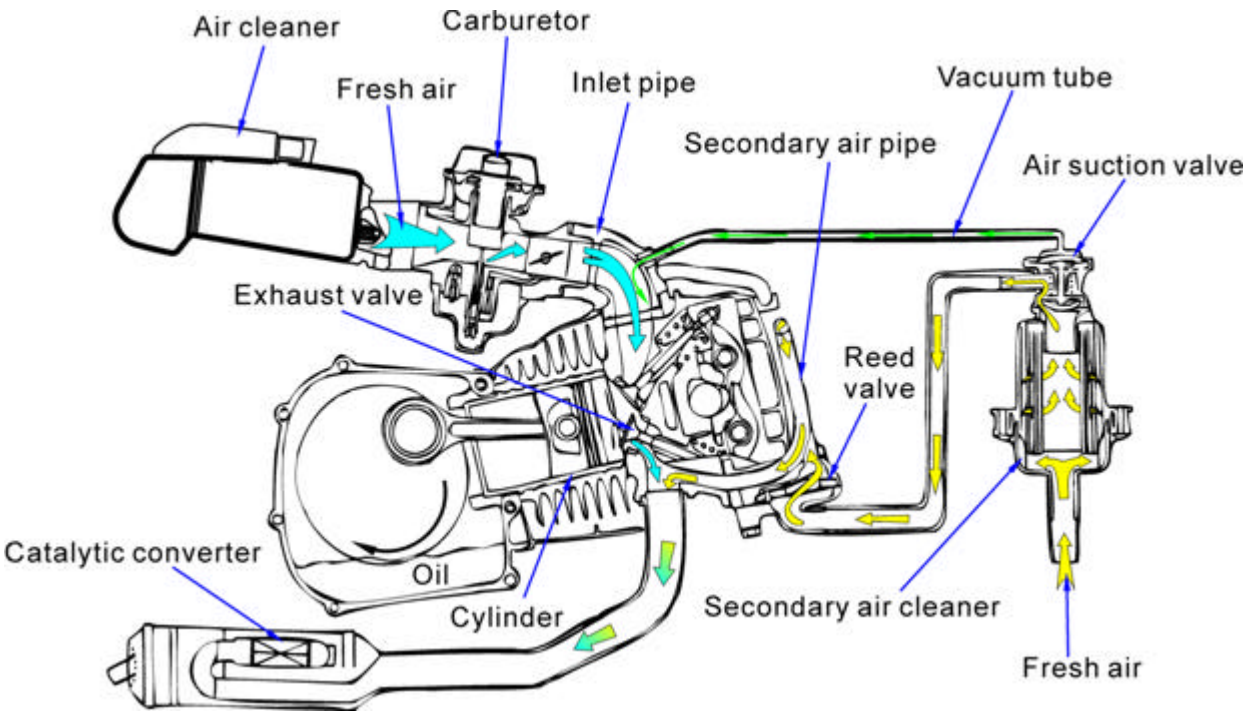
KYMCO TECHNICAL INFORMATION

Model: ALL MODEL (For EURO 2) **Date: 8.JAN.04**
Subject: KYMCO Clean Air System (For EURO 2)
NO.: KTI-04002

KYMCO Clean Air System (For EURO 2)

The KYMCO Clean Air System is a secondary air suction system that helps the exhaust gases to burn more completely. When the spent fuel charge is released into the exhaust system, it is still hot enough to burn. The system allows extra air into the exhaust system so that the spent fuel charge can continue to burn. This continued burning action tends to burn up a great deal of the normally unburned gases, as well as changing a significant portion of the poisonous carbon monoxide into harmless carbon dioxide.

Secondary Air Suction System Diagram (4-stroke)

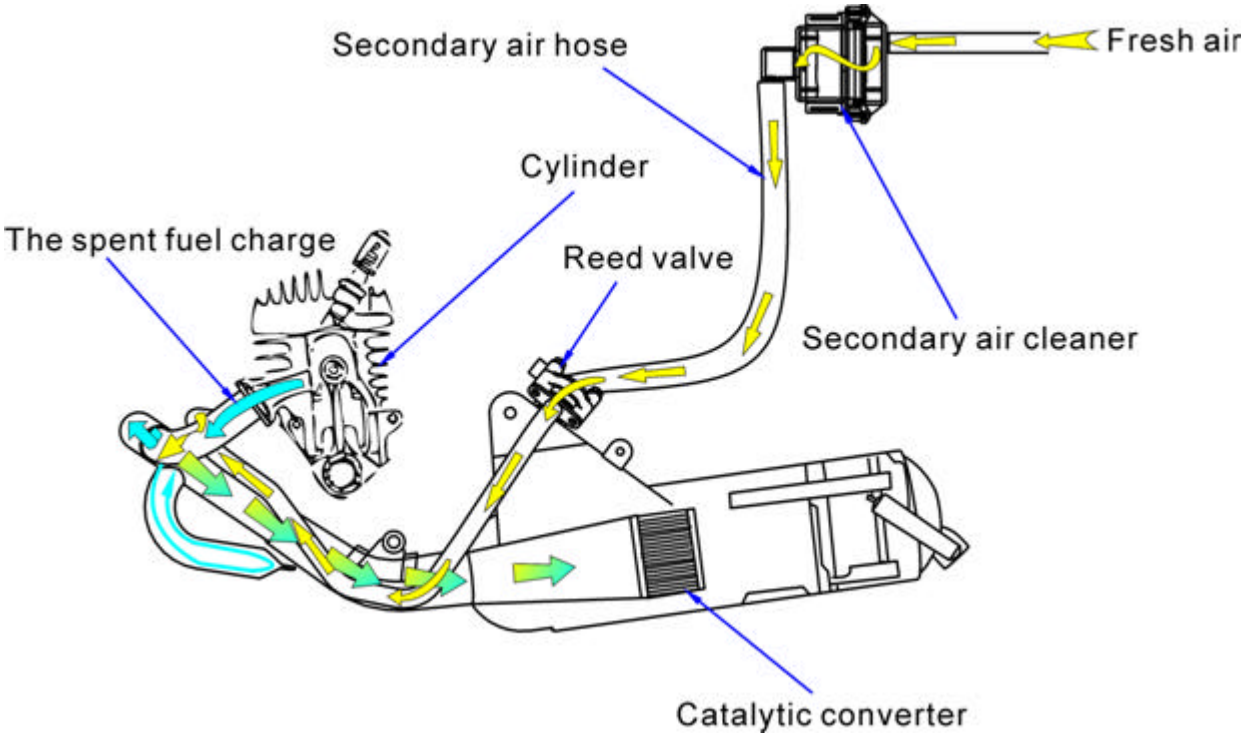


KYMCO TECHNICAL INFORMATION

Model: ALL MODEL (For EURO 2) **Date: 8.JAN.04**
Subject: KYMCO Clean Air System (For EURO 2)

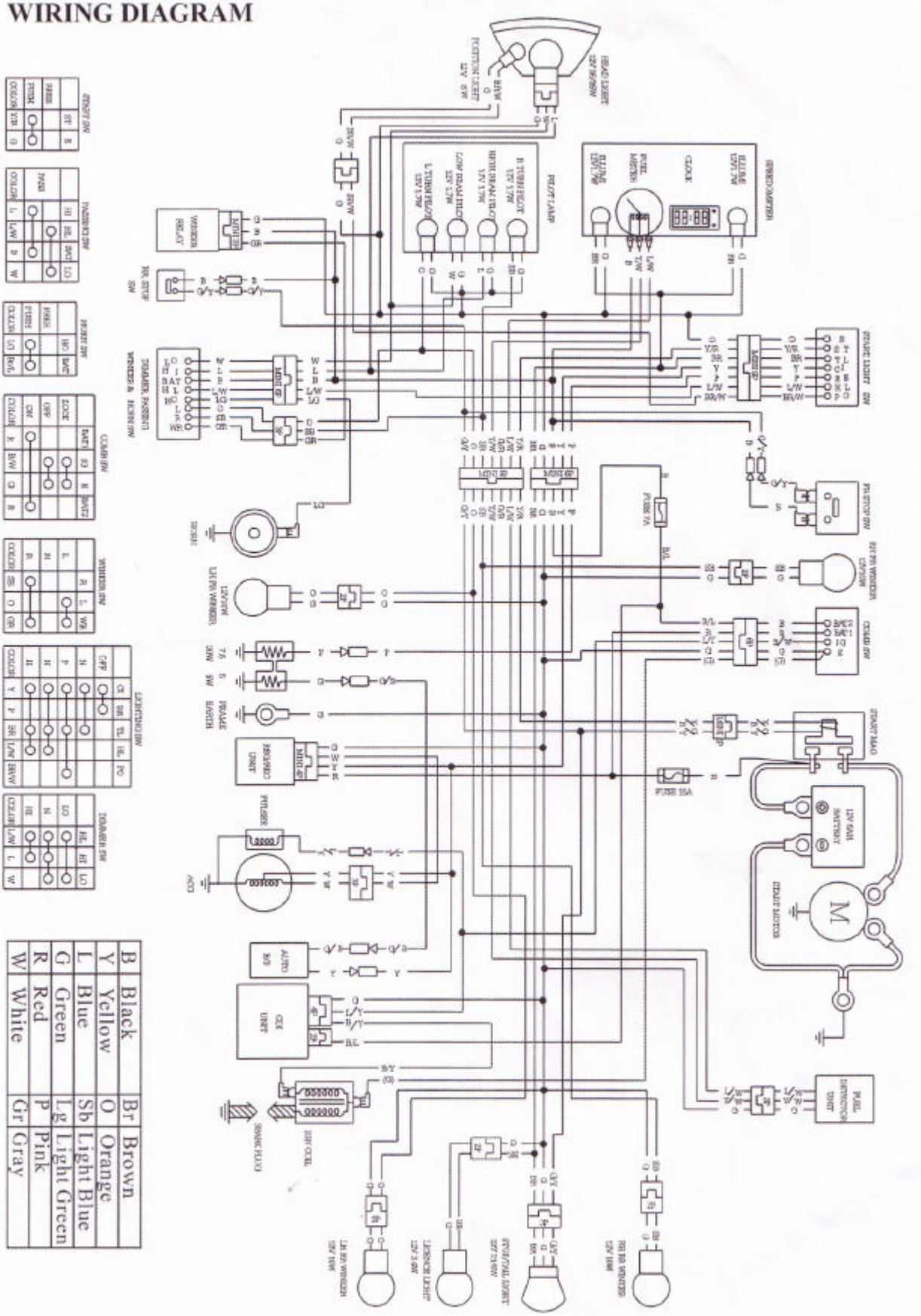
NO.: KTI-04002

Secondary Air Suction System Diagram (2-stroke)



1. GENERAL INFORMATION

WIRING DIAGRAM



B	Black	Br	Brown
Y	Yellow	O	Orange
L	Blue	Sb	Light Blue
G	Green	Lg	Light Green
R	Red	P	Pink
W	White	Gr	Gray